Bulk Statistics Collector for CBX 500 User's Guide

Ascend Communications, Inc.

Product Code: 80047
Revision 00
June1997

ASCEND COMMUNICATIONS, INC. END-USER LICENSE AGREEMENT

ASCEND COMMUNICATIONS, INC. IS WILLING TO LICENSE THE ENCLOSED SOFTWARE AND ACCOMPANYING USER DOCUMENTATION (COLLECTIVELY, THE "PROGRAM") TO YOU ONLY UPON THE CONDITION THAT YOU ACCEPT ALL OF THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT. PLEASE READ THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT CAREFULLY BEFORE OPENING THE PACKAGE(S) OR USING THE ASCEND SWITCH(ES) CONTAINING THE SOFTWARE, AND BEFORE USING THE ACCOMPANYING USER DOCUMENTATION. OPENING THE PACKAGE(S) OR USING THE ASCEND SWITCH(ES) CONTAINING THE PROGRAM WILL INDICATE YOUR ACCEPTANCE OF THE TERMS OF THIS LICENSE AGREEMENT. IF YOU ARE NOT WILLING TO BE BOUND BY THE TERMS OF THIS LICENSE AGREEMENT, ASCEND IS UNWILLING TO LICENSE THE PROGRAM TO YOU, IN WHICH EVENT YOU SHOULD RETURN THE PROGRAM WITHIN TEN (10) DAYS FROM SHIPMENT TO THE PLACE FROM WHICH IT WAS ACQUIRED, AND YOUR LICENSE FEE WILL BE REFUNDED. THIS LICENSE AGREEMENT REPRESENTS THE ENTIRE AGREEMENT CONCERNING THE PROGRAM BETWEEN YOU AND ASCEND, AND IT SUPERSEDES ANY PRIOR PROPOSAL, REPRESENTATION OR UNDERSTANDING BETWEEN THE PARTIES.

1. License Grant. Ascend hereby grants to you, and you accept, a non-exclusive, non-transferable license to use the computer software, including all patches, error corrections, updates and revisions thereto in machine-readable, object code form only (the "Software"), and the accompanying User Documentation, only as authorized in this License Agreement. The Software may be used only on a single computer owned, leased, or otherwise controlled by you; or in the event of inoperability of that computer, on a backup computer selected by you. You agree that you will not pledge, lease, rent, or share your rights under this License Agreement, and that you will not, without Ascend's prior written consent, assign or transfer your rights hereunder. You agree that you may not modify, reverse assemble, reverse compile, or otherwise translate the Software or permit a third party to do so. You may make one copy of the Software and User Documentation for backup purposes. Any such copies of the Software or the User Documentation shall include Ascend's copyright and other proprietary notices. Except as authorized under this paragraph, no copies of the Program or any portions thereof may be made by you or any person under your authority or control.

2. Ascend's Rights. You agree that the Software and the User Documentation are proprietary, confidential products of Ascend or Ascend's licensor protected under US copyright law and you will use your best efforts to maintain their confidentiality. You further acknowledge and agree that all right, title and interest in and to the Program, including associated intellectual property rights, are and shall remain with Ascend or Ascend's licensor. This License Agreement does not convey to you an interest in or to the Program, but only a limited right of use revocable in accordance with the terms of this License Agreement.

3. License Fees. The license fees paid by you are paid in consideration of the license granted under this License Agreement.

4. Term. This License Agreement is effective upon your opening of the package(s) or use of the switch(es) containing Software and shall continue until terminated. You may terminate this License Agreement at any time by returning the Program and all copies or portions thereof to Ascend. Ascend may terminate this License Agreement upon the breach by you of any term hereof. Upon such termination by Ascend, you agree to return to Ascend the Program and all copies or portions thereof. Termination of this License Agreement shall not prejudice Ascend's rights to damages or any other available remedy.

5. Limited Warranty. Ascend warrants, for your benefit alone, for a period of 90 days from the date of shipment of the Program by Ascend (the "Warranty Period") that the program diskettes in which the Software is contained are free from defects in material and workmanship. Ascend further warrants, for your benefit alone, that during the Warranty Period the Program shall operate substantially in accordance with the User Documentation. If during the Warranty Period, a defect in the Program appears, you may return the Program to the party from which the Program was acquired for either replacement or, if so elected by such party, refund of amounts paid by you under this License Agreement. You agree that the foregoing constitutes your sole and exclusive remedy for breach by Ascend of any warranties made under this Agreement. EXCEPT FOR THE WARRANTIES SET FORTH ABOVE, THE PROGRAM IS LICENSED "AS IS", AND ASCEND DISCLAIMS ANY AND ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTIES OF NONINFRINGEMENT.

6. Limitation of Liability. Ascend's cumulative liability to you or any other party for any loss or damages resulting from any claims, demands, or actions arising out of or relating to this License Agreement shall not exceed the greater of: (i) ten thousand US dollars ($10,000) or (ii) the total license fee paid to Ascend for the use of the Program. In no event shall Ascend be liable for any indirect, incidental, consequential, special, punitive or exemplary damages or lost profits, even if Ascend has been advised of the possibility of such damages.

7. Proprietary Rights Indemnification. Ascend shall at its expense defend you against and, subject to the limitations set forth elsewhere herein, pay all costs and damages made in settlement or awarded against you resulting from a claim that the Program as supplied by Ascend infringes a United States copyright or a United States patent, or misappropriates a United States trade secret, provided that you: (a) provide prompt written notice of any such claim, (b) allow Ascend to direct the defense and settlement of the claim, and (c) provide Ascend with the authority, information, and assistance that Ascend deems reasonably necessary for the defense and settlement of the claim. You shall not consent to any judgment or decree or do any other act in compromise of any such claim without first obtaining Ascend's written consent. In any action based on such a claim, Ascend may, at its sole option, either: (1) obtain for you the right to continue using the Program, (2) replace or modify the Program to avoid the claim, or (3) if neither (1) nor (2) can reasonably be effected by Ascend, terminate the license granted hereunder and give you a prorata refund of the license fee paid for such Program, calculated on the basis of straight-line depreciation over a five-year useful life. Notwithstanding the preceding sentence, Ascend will have no liability for any infringement or misappropriation claim of any kind if such claim is based on: (i) the use of other than the current unaltered release of the Program and Ascend has provided or offers to provide such release to you for its then current license fee, or (ii) use or combination of the Program with programs or data not supplied or approved by Ascend to the extent such use or combination caused the claim.

8. Export Control. You agree not to export or disclose to anyone except a United States national any portion of the Program supplied by Ascend without first obtaining the required permits or licenses to do so from the US Office of Export Administration, and any other appropriate government agency.

9. Governing Law. This License Agreement shall be construed and governed in accordance with the laws and under the jurisdiction of the Commonwealth of Massachusetts, USA. Any dispute arising out of this Agreement shall be referred to an arbitration proceeding in Boston, Massachusetts, USA by the American Arbitration Association.

10. Miscellaneous. If any action is brought by either party to this License Agreement against the other party regarding the subject matter hereof, the prevailing party shall be entitled to recover, in addition to any other relief granted, reasonable attorneys' fees and expenses of arbitration. Should any term of this License Agreement be declared void or unenforceable by any court of competent jurisdiction, such declaration shall have no effect on the remaining terms hereof. The failure of either party to enforce any rights granted hereunder or to take action against the other party in the event of any breach hereunder shall not be deemed a waiver by that party as to subsequent enforcement of rights or subsequent actions in the event of future breaches.

Contents

About This Guide

What You Need to Know xiii
How to Use This Guide xiv
Related Documentation xv
Conventions xvi

Chapter 1 Overview

CBX 500 Versus B-STDX 9000 Bulk Statistics 1-3
CBX 500 Raw Statistics Files 1-3
The ATM Bulk Statistics Collection Station 1-4
- Collection of Raw Statistics Files 1-5
- Nightly Procedures 1-7
  - Raw Statistics 1-7
  - Translated Statistics 1-7
  - Purging Archived Files 1-7

The ATM Bulk Statistics Sybase 11x Database 1-8
System Management 1-8
- Automatic Restart 1-9
- Event Logging 1-9

Network Time Protocol (NTP) 1-9
Configuration Examples 1-10
Hardware Requirements 1-12
Software Requirements 1-12
Supported Cascade Switches 1-13
- CBX 500 1-13
  - Hardware 1-13
  - Software 1-13

Chapter 2 Installation and Configuration

Before You Begin 2-1
Installing ATM Bulk Statistics 2-2
Completing the Installation Checklists 2-4
- Checklist 1 — Single System Installation 2-6
  - Testing the Configuration 2-6

Running ATM Bulk Statistics 2-6
Checklist 2 — Dual System Installation 2-7
Testing the Configuration 2-8
Running ATM Bulk Statistics 2-8
Checklist 3 — Three-System Installation 2-9
Testing the Configuration 2-11
Running ATM Bulk Statistics 2-11
Checklist 4 — Four-System Installation 2-12
Testing the Configuration 2-14
Running ATM Bulk Statistics 2-14
Running the pkgadd Utility 2-15
The Configuration File 2-22
The ReConfig Script 2-24
Removing the ATM Bulk Statistics Software Package 2-24
Upgrade Procedure 2-25
Getting Started 2-25
Upgrading the Software 2-26
Creating Routes to the ATM Bulk Statistics Collection Station 2-27
Defining an NMS Entry for the ATM Bulk Statistics Collection Station 2-29
Setting ATM Bulk Statistics Attributes 2-31
Push Buttons 2-32
Enabling ATM Bulk Statistics 2-33
Push Buttons 2-37
Configuring a Management ATM Bulk Statistics VPI/VCI 2-37
Push Buttons 2-41

Chapter 3 Installing Sybase 11x

Getting Started 3-1
Defining Partitions 1 and 3 3-4
Creating a Master Device on Partition 0 3-4
Creating a System Procs Device on Partition 4 3-5
Creating a CascadeView Device on Partition 5 3-6
Creating a Log Device on Partition 6 3-7
Calculating the Remaining Unallocated Drive Space 3-7
Defining Partition 7 3-9
Loading the Cascade-supplied Sybase Media 3-10
Setting Up the System 3-12
Using Raw Partitions for the Master Device 3-16
Using File System Files for the Master Device 3-18
Running the Sybase 11x Installation Script 3-21
Configuring a Local Backup Server 3-25

Chapter 4 Running ATM Bulk Statistics

Before You Begin 4-1
Using the Console Commands 4-2
Starting ATM Bulk Statistics 4-2
Stopping ATM Bulk Statistics 4-2
Obtaining the Status of the ATM Bulk Statistics Collection Station 4-3

The ATM Debug Translator (ATM_bsdump) 4-3
Gathering ATM Statistics 4-3
ATM PVC Statistics 4-4
ATM Logical Port Statistics 4-7
ATM Logical Port SVC Statistics 4-9

Chapter 5 Troubleshooting

Contacting the Technical Response Center 5-1
Common Problems (Raw Statistics) 5-2

Appendix A Translated Statistics Format

General Header Fields A-1
Formatting of 40-bit Counters A-2
ATM PVC Translated File Format A-3
ATM Cell Trunk Translated File Format A-4
ATM Logical Port (UNI, PNNI, B-ICI) Translated File Format A-5
ATM Logical Port (UNI, PNNI, B-ICI) SVC Call Statistics Translated File Format A-6

Appendix B Database Schema

ATMCktStat Table B-2
ATMTrkStat Table B-4
ATMPrtStat Table B-6
ATMSvcStat Table B-8

Appendix C Calculating Disk Space

Storing Raw, Translated, and Archived Statistics C-2
Formula 1 — Raw Data Statistics C-2
Formula 2 — Archived Raw Statistics C-2
Formula 3 — Translated Data Statistics C-3
Formula 4 — Archived Translated Statistics C-3
Formula 5 — Total Disk Space Required for a Single Day C-4
Formula 6 — Total Space Required for the Archive C-4
Total Disk Space Required for all Statistics C-4
Estimating Sybase 11x Database Size C-5
Example: C-5

Appendix D Configuring NTP

Copyright Notice D-2
NTP Overview D-2
Running NTP D-3
Using ntpq to Verify NTP D-3
The rv Command D-4
The pe Command D-4

Index

List of Figures

Figure 1-1. ATM Bulk Statistics Collection Process 1-2
Figure 1-2. ATM Bulk Statistics Translation Process 1-5
Figure 1-3. Recommended ATM Bulk Statistics Configuration 1-10
Figure 2-1. ATM Bulk Statistics Installation and Configuration Sequence 2-2
Figure 2-2. ATM Bulk Statistics Directory Structure 2-3
Figure 2-3. Running the Pkgadd Utility 2-15
Figure 2-4. ATM Bulk Statistics Configuration File 2-23
Figure 2-5. Set NMS Paths Dialog Box 2-27
Figure 2-6. Add NMS Path Dialog Box 2-28
Figure 2-7. Set NMS Entries Dialog Box 2-29
Figure 2-8. Add NMS Entry Dialog Box 2-30
Figure 2-9. Set Bulk Statistics Attributes Dialog Box 2-31
Figure 2-10. Bulk Statistics Configuration Dialog Box 2-35
Figure 2-11. Set All Management VPI/VCIs Dialog Box 2-38
Figure 2-12. Select End Logical Port Dialog Box 2-39
Figure 2-13. Add Management VPI/VCI Dialog Box 2-40
Figure 3-1. Partition Warning Window 3-2
Figure 3-2. Format Menu 3-3
Figure 3-3. Partition Menu 3-3
Figure 3-4. Unallocated Space Window 3-8
Figure 3-5. Tail Window 3-11
Figure 3-6. Sybase Installation Menu 3-11
Figure 3-7. Device Installation Menu 3-15
Figure 3-8. Sybase 11x Master Device Menu 3-16
Figure 3-9. Warning Window 3-18
Figure 3-10. Disk Space Report Screen 3-19
Figure 3-11. Sybase Installation Menu 3-22
Figure 3-12. Raw Partition Parameters Window 3-23

List of Tables

Table 1-1. Translated Files 1-6
Table 1-2. ATM Bulk Statistics Configuration Matrix 1-11
Table 2-1. Installation Checklists 2-4
Table 2-2. Set Bulk Statistics Attributes Dialog Box Fields 2-32
Table 2-3. Bulk Statistics Configuration Dialog Box Fields 2-35
Table 2-4. Select End Logical Port Dialog Box Fields 2-39
Table 2-5. Add Management VPI/VCI Dialog Box Fields 2-41
Table 3-1. Partition Settings 3-2
Table 3-2. Partition Table 3-5
Table 4-1. ATM PVC Statistics 4-4
Table 4-2. ATM Logical Port Statistics 4-7
Table 4-3. ATM Logical Port SVC Statistics 4-9
Table B-1. ATMCktStat Table B-2
Table B-2. ATM TrkStat Table B-4
Table B-3. ATMPrtStat Table B-6
Table B-4. ATMSvcStat Table B-8

About This Guide

This guide provides both an overview of how ATM Bulk Statistics operates and step-by-step instructions for installing and using ATM Bulk Statistics.

What You Need to Know

This guide is intended for Cascade network administrators responsible for configuring the CBX 500. Readers should be familiar with basic UNIX operating system commands. In addition, a working knowledge of relational database software is helpful.

This guide assumes the following:

- ☑ The CBX 500 switch hardware is up and running. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView SPARCstation is properly connected to the CBX 500 switch. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView software is up and running on the CascadeView SPARCstation. Refer to the *Network Configuration Guide for CBX 500* for instructions.

How to Use This Guide

This guide is organized into the following chapters and appendixes:

Read	To Learn About...
Chapter 1: Overview	ATM Bulk Statistics — This chapter introduces ATM Bulk Statistics and provides an overview of the ATM statistics collection process. This chapter also describes the hardware and software requirements for running ATM Bulk Statistics.
Chapter 2: Installation and Configuration	Cascade's recommended instructions for installing and configuring ATM Bulk Statistics.
Chapter 3: Installing Sybase 11x	Cascade's recommended instructions for installing Sybase 11x.
Chapter 4: Running ATM Bulk Statistics	How to run ATM Bulk Statistics. This chapter also includes the type of ATM statistics that can be gathered from the CBX 500.
Chapter 5: Troubleshooting	General troubleshooting procedures for diagnosing problems that can occur when installing and running ATM Bulk Statistics.
Appendix A: Translated Statistics Format	The translated statistics file formats ATM Bulk Statistics creates during the translation process.
Appendix B: Database Schema	The ATM Bulk Statistics database schema.
Appendix C: Calculating Disk Space	The formulas that you can use to determine your system's disk space requirements for ATM Bulk Statistics.
Appendix D: Configuring NTP	How to configure your ATM Bulk Statistics Collection Station with the Network Time Protocol (NTP).

Before you begin the tasks described in this guide, read the Software Release Notice (SRN) that accompanies the software.

Related Documentation

The following manuals provide the complete document set for ATM Bulk Statistics:

- *CBX 500 Hardware Installation Guide*
  (Product Code: 80011)
- *Network Configuration Guide for CBX 500*
  (Product Code: 80049)
- *Diagnostic and Troubleshooting Guide for CBX 500*
  *(*Product Code: 80050)
- *Network Management Station Installation Guide*
  *(*Product Code: 80014)
- *Accounting System Administrator's Guide*
  (Product Code: 80046)

Conventions

This guide uses the following conventions to emphasize certain information, such as user input, screen options and output, and menu selections. For example:

Convention	Indicates	Example
Menu ⇒ Option	Select an option from the menu.	CascadeView ⇒ Logon
`Courier bold`	User input on a separate line.	**`cd install`**
`Courier`	System output.	*`Please enter host name.`*
Boldface	User input and screen options in text.	Enter **cd install**
Italics	Book titles, new terms, filenames, pathnames, and emphasized text.	*Network Management Station Installation Guide*
Blue border surrounding text	Notes and warnings.	See examples below.

Notes provide helpful suggestions or reference to materials not contained in this manual.

Warnings caution the reader to proceed carefully in order to avoid equipment damage or personal harm.

1

Overview

The Asynchronous Transfer Mode (ATM) Bulk Statistics application gathers and stores ATM statistical information for the following measurements on selected CBX 500s:

- ATM Permanent Virtual Circuits (PVCs), including Permanent Virtual Paths
- Logical ports, including User-to-Network Interface (UNI), Inter-Carrier Interface (B-ICI), and Private Network Node Interface (PNNI)
- ATM Cell Trunks
- ATM Switched Virtual Circuit (SVC) calls

Data is made available for a variety of purposes, including historical trend analysis, network design and planning, and Customer Network Management (CNM)-based reports.

The ATM Bulk Statistics Collection Station (the Collector) is responsible for the reception, processing, translation, and storage of usage statistics generated by the CBX 500. The data is made available in ASCII comma-delimited file format, or optionally through a Sybase 11x database.

In general, the Collector provides:

- 5-minute Peak Statistics

  A 5-minute peak statistic is the maximum value of the statistic as measured during the number of 5-minute samples determined by the measurement period length, beginning at the start of the measurement period.

- Measurement Period Statistics

  A measurement period statistic is an aggregate count from the start to the end of the measurement period, and is not reported as a running total from one measurement period to the next.

The length of the measurement period and the capability to generate peaks and totals is configured through CascadeView on a per-I/O module basis for each CBX 500 in the network. The CBX 500 is responsible for calculating the peak and period data directly as the measurement period unfolds. The translated data is then made available in near real-time at the Collector.

Figure 1-1 illustrates the ATM Bulk Statistics collection process.

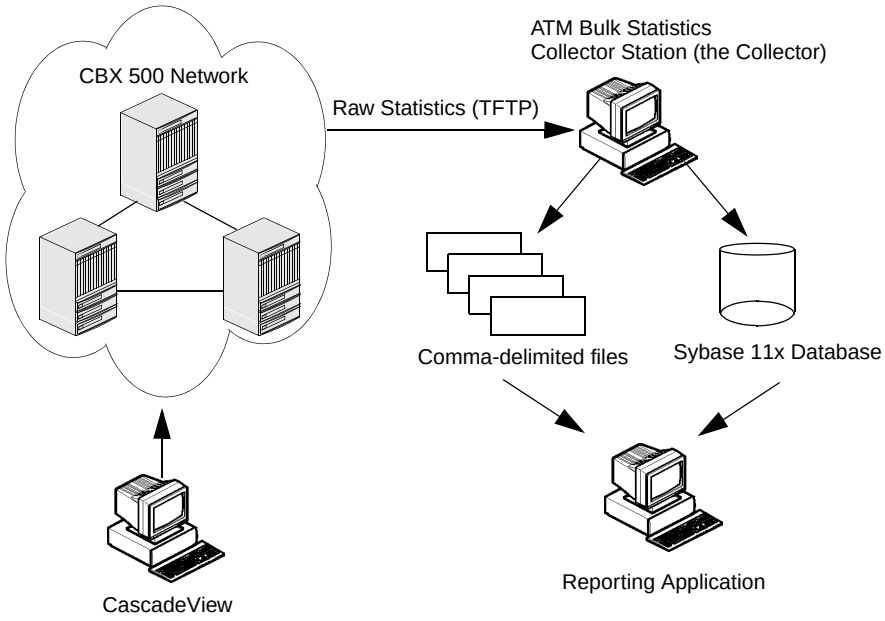


Figure 1-1. ATM Bulk Statistics Collection Process

CBX 500 Versus B-STDX 9000 Bulk Statistics

The CBX 500 ATM Bulk Statistics architecture differs from Bulk Statistics for the B-STDX 9000 in the following ways:

- The ATM Bulk Statistics Collection Station (the Collector) does not poll CBX 500 switches at the end of the configured measurement period to acquire data. Instead, each CBX 500 maintains its own internal clock and sends data to the Collector at the end of the configured measurement period.
- All ATM Bulk Statistics configuration is done through CascadeView, including CBX 500 assignments. Consequently, there is no Switch List on the Collector for CBX 500 switches.
- Measurement periods are provisioned for each IOM through CascadeView. The measurement periods are not fixed at 1 hour. Therefore, each installed IOM can be configured with different Peak Count and Total Count Collection values. For example, a DS3 IOM in Slot 5 can have Peak Count Collection enabled for a 1-hour period, while an OC3 IOM in Slot 10 can have Peak Count Collection enabled for a 20-minute period.

The remainder of this chapter describes the various components of the ATM Bulk Statistics architecture in more detail. Refer to "Gathering ATM Statistics" on page 4-3 for information on the types of ATM statistics that can be gathered from the CBX 500.

CBX 500 Raw Statistics Files

The CBX 500 Bulk Statistics application processes two kinds of statistics:

CBX 500 Measurement Period Statistics — This statistic is an aggregate count from the start to the end of the measurement period. This is referred to as the Base Collection Period. The aggregate statistic is reset to zero at the beginning of each measurement period and is not reported as a running total from one period to the next.

CBX 500 5-minute Peak Statistics — This statistic is the maximum value of the statistic as measured during the number of 5-minute samples determined by the period length, beginning at the start of the measurement period (e.g., from 00:00 to 00:04.99, 00:05 to 00:09.99, 00:10 to 00:14.99, and so on).

The length of the measurement period and the capability to generate 5-minute peak statistics are configured on a per-IOM basis using CascadeView. The base collection period can be configured with allowable values of 15 minutes to 24 hours. Refer to "Enabling ATM Bulk Statistics" on page 2-33 for configuration information.

All CBX 500 nodes send the following to the Collector:

- UNI statistics
- B-ICI statistics
- PNNI statistics
- Cell Trunk statistics

Per-PVC statistics are generated by input and output nodes only. The peak and total capability for SVC statistics is determined by the ATM Bulk Statistics configuration. Therefore, SVC statistics collection follows the setting for the ATM Bulk Statistics PVC configuration (peak enabled/disabled, totals enabled/disabled, and base collection period).

Within a given network, IOMs can have different ATM Bulk Statistic collection settings. In addition, ATM Bulk Statistics collection settings affect the number of supported VCs on an IOM. Enabling of peak/total collection capability will limit the number of supported VCs to 6K on an IOM with 16 Mbytes of memory.

The ATM Bulk Statistics Collection Station

The ATM Bulk Statistics Collection Station (the Collector) is responsible for the reception, processing, translation, and storage of CBX 500 Bulk Statistics data. The Collector includes the following capabilities:

- ATM Bulk Statistics raw data transfer using TFTP
- Translation of raw statistics into ASCII comma-delimited format and an optional bulk-copy into a Sybase 11x database
- Nightly database purge of ATM statistics
- Nightly archival and purge of raw statistics data and comma-delimited files

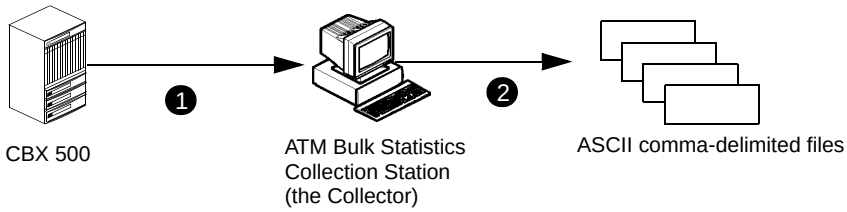
Collection of Raw Statistics Files

The CBX 500 uses the Cascade-supplied TFTP server (tftpserv) to transfer the raw statistics data files to the */tftpboot/bulkstatsC500* directory on the Collector. The CBX 500 software automatically sends data files to the Collector at the end of each specified collection period.

The raw statistics files arriving from the CBX 500 contain both the measurement period totals and 5-minute peak values for all ATM statistics. The translation process is executed soon after the raw data files arrive at the Collector. The translation process includes both translation to ASCII comma-delimited format and optionally bulk-copying the data into a Sybase 11x database.

As the translation process executes, the raw statistics files from the CBX 500 remain on the Collector in the *BulkStatsATM/data/current* directory until the translation process is complete. Then, the files are moved into the *BulkStatsC500/data/raw* directory.

Figure 1-2 shows the ATM Bulk Statistics translation process.



1. Raw statistics files arrive at the Collector. The filenames have the following format:
bs_B_ATM.<IP address of CBX 500><timestamp>.<sequence number>

2. The raw data statistics are then translated into ASCII comma-delimited files. The filenames have the following format:
CBX500_TRK (for Cell Trunk data) <IP address of CBX 500>

Figure 1-2. ATM Bulk Statistics Translation Process

Table 1-1 lists the types of translated files produced by the Collector.

Table 1-1. Translated Files

Filename	Description
ATM_CKT.<IP address><timestamp>	Total and 5-minute peak values for ATM PVCs.
ATM_TRK<IP address><timestamp>	Total and 5-minute peak values for Cell Trunks.
ATM_SVC<IP address><timestamp>	Total and 5-minute peak values for SVC call statistics.
ATM_PRT<IP address><timestamp>	Total and 5-minute peak values for logical ports (UNI, B-ICI, and PNNI).

Optionally, you can configure the Collector to have the translated files bulk-copied into a Sybase 11x database. The data imported into the Sybase 11x database is taken directly from the translated files. Refer to Chapter 3, “Installing Sybase 11x,” for Sybase 11x installation instructions.

Nightly Procedures

At the end of the day, midnight, a set of procedures are automatically executed to archive the day's statistics and to reclaim disk space.

Raw Statistics

Raw statistic files collected during the day are moved into the *<install_dir>/BulkStatsATM/data/raw* directory immediately after translation and bulk copy operations are performed for that period.

At the end of the day, all files collected from each CBX 500 are tar'd (using the UNIX tar command) into a single file and compressed using the standard UNIX compress utility. The files are then moved into a user-defined directory.

One tar'd and compressed file is created for each CBX 500 with a filename that contains the CBX 500's IP address and time/datestamp of the archive.

The archive allows you to later retrieve the raw statistics files. The archive process does not delete any files if the directory is full. It only stores the raw statistics files. After the archive operation is completed, an optional user-defined shell script can be executed.

Translated Statistics

Translated statistics are kept for one day. Then, they are tar'd into a single file, compressed, and moved into a user-defined archive directory. The filename contains the CBX 500's IP address and time/date stamp of the archive.

Purging Archived Files

To reduce the amount of disk space acquired by ATM Bulk Statistics processing, old archived statistics files (both raw and translated) are purged daily. The sample date from the database entry is used to determine if the entry is to be aged. The sample date is defined as the date and time at which the sample was measured at the CBX 500 (i.e., the year, month, day, hour, and minute fields defined in each statistics record).

The default value is 30 days. Purging of archived files is configured at installation time. For example, if *n* is 30, all entries older than 30 days will be deleted from the database each night.

The ATM Bulk Statistics Sybase 11x Database

If you are using Sybase 11x to store your ATM Bulk Statistical data, you will need to install Sybase 11x Open Server, Version 11x. Refer to Chapter 3, “Installing Sybase 11x,” for installation instructions.

System Management

All configuration of ATM Bulk Statistics on the CBX 500 is performed through CascadeView, including the measurement periods for each IOM and CBX 500-to-Collector assignments. IOMs can be configured to have different peak and total capabilities.

To manage the Collector, you must use the following command-line procedures:

Startup — The startup command enables the Collector processes.

Shutdown — The shutdown command disables the Collector processes. When shut down, the Collector will not execute any of the translation, bulk-copy, or nightly processes. To guarantee data integrity, the shutdown procedure will wait until all Collector processes are idle before disabling the system.

Collector Status — The status command displays the current state of the Collector.

Refer to Chapter 4, “Running ATM Bulk Statistics,” for information about using the console commands.

Control of ATM Bulk Statistics is available only to users with ATM Bulk Statistics group access.

Automatic Restart

If the Collector resets, the last state of the Collector is restored upon restart. Therefore, if the Collector was enabled when the system is reset, it is restarted when the system reboots. Similarly, the Collector will not be enabled if the system had been disabled at the time of the reboot.

To increase the availability of the system, an ATM Bulk Statistics integrity check is made at boot-time to verify that all ATM Bulk Statistics jobs are scheduled if the state indicates that collection is enabled. A similar check is made if the state indicates that collection is disabled.

If Sybase 11x is running on the machine that rebooted, you need to restart Sybase 11x. In addition, you need to re-define the NMS path to the CBX 500 switch from which you are collecting statistics.

Event Logging

Events and actions that occur on the Collector are logged to a text file. This provides an audit trail that can help in troubleshooting and managing the system. All events are time stamped with the time of the event or action. Logged events include:

- Collector startup or shutdown, including the name of the person that performed the operation
- Collector restart (e.g., when the system is rebooted and the Collector is restarted on reboot)
- Translation failure or failure to access the Sybase 11x database
- Disk access failures (e.g., disk full or error writing translated data to disk)

Network Time Protocol (NTP)

The ATM Bulk Statistics Collection Station provides a version of the Network Time Protocol (NTP) that is used to synchronize the time-of-day clocks for all Cascade switches that generate ATM Bulk Statistics data. Additional information about NTP is available in the help files located in *<install_directory>/BulkStatsATM/ntp/html*.

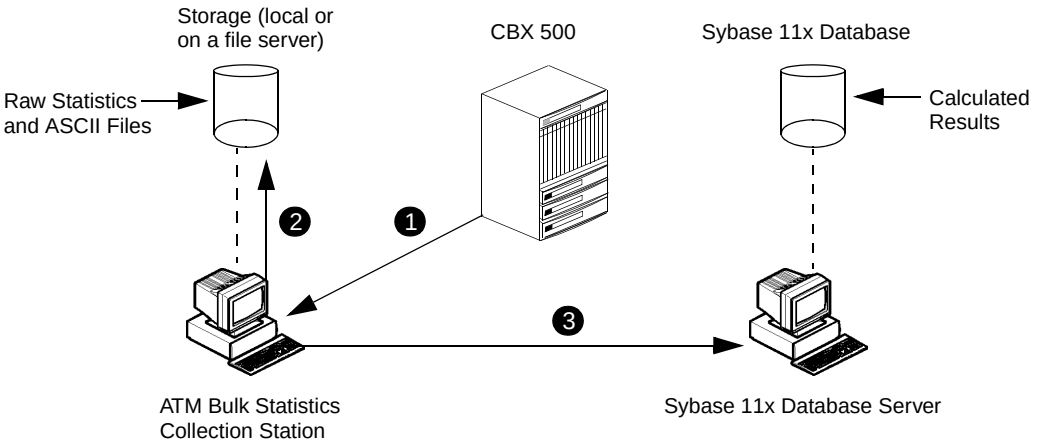
Refer to Appendix D, “Configuring NTP,” for information about how to configure your ATM Bulk Statistics Collection Station with NTP.

Configuration Examples

The ATM Bulk Statistics Collection Station (the Collector) can be installed in a variety of locations. For example, you can install the Collector on the same system running:

- The B-STDX 9000 Collector
- The Sybase 11x server that hosts the ATM Bulk Statistics database
- The CascadeView Fault Server or Accounting Server (not recommended)
- CascadeView (not recommended)

The ability to execute the Collector software in a specific configuration depends on the server configuration, including the number of processors and available memory, and the amount of available disk space. The recommended configuration is shown in Figure 1-3.



1. Data is sent from the CBX 500 to the Collection Station.
2. The Collection Station stores translated statistics (ASCII files) in local storage (or on a file server).
3. The ATM Bulk Statistics Bulk Copy Utility copies calculated ATM statistics to the Sybase 11x database.

Figure 1-3. Recommended ATM Bulk Statistics Configuration

Table 1-2 includes other possible configurations.

Table 1-2. ATM Bulk Statistics Configuration Matrix

Config	Workstation 1	Workstation 2	Workstation 3	Workstation 4
1	- CascadeView - HP OpenView - NMS Database - ATM Bulk Statistics Collector - ATM Bulk Statistics Database	(Not Recommended)*		
2	- CascadeView - HP OpenView - NMS Database	- ATM Bulk Statistics Collector - ATM Bulk Statistics Database		
3	- CascadeView - HP OpenView - NMS Database	- ATM Bulk Statistics Database	- ATM Bulk Statistics Collector	
4	- CascadeView - HP OpenView	- NMS Database	- ATM Bulk Statistics Collector	- ATM Bulk Statistics Database

* Configuration 1 is not recommended for networks with many CBX 500s. ATM Bulk Statistics traffic is directed to a single collection station. Therefore, overall system performance could be impacted.

Keep in mind that configurations 2 through 4 differ only in the placement of the database components. Configuration 4 is the recommended configuration. The ATM Bulk Statistics Collector is separate from CascadeView and additional Collectors can be easily added to the network.

Hardware Requirements

The following list outlines the minimum hardware requirements for the ATM Bulk Statistics Collection Station (the Collector) for ATM Bulk Statistics:

- Sun Ultra Enterprise 2 or SPARCstation 20. The workstation should be configured with:
  - 128 MB on-board memory
  - 1/4-inch cartridge (QIC) tape drive
  - 2.1 GByte internal disk drive
- The amount of disk space you need depends upon a number of factors, including the polling interval, number of nodes, number of PVCs, and your system's configuration. Refer to Appendix C for information about calculating disk space for your system.

Software Requirements

The following outlines the minimum software requirements for ATM Bulk Statistics.

- Minimum of Solaris 2.4 (with Software Patch #101945-36)
  - If you are using Solaris 2.4, Motif 1.2.4 for Solaris 2.4 is required. If you have installed OpenWindows or Motif in a non-default location, you should always have the $MOTIFHOME and $OPENWINHOME environment variables set when you run ATM Bulk Statistics.
  - If you are using Solaris 2.5, all maintenance release patches are required and the Common Desktop Environment (CDE) for Solaris 2.5 is required.
- Sybase Open Server, Version 11x (required if you are using Sybase to store your statistical data. Sybase 4.9.2 is not supported).

Supported Cascade Switches

CBX 500

Hardware

ATM Bulk Statistics supports all CBX 500 hardware.

Software

ATM Bulk Statistics has the following minimum requirements for the CBX 500 software:

- Versions 2.0 or higher of the CBX 500 switch software
- CascadeView, Version 2.4 or higher

2

Installation and Configuration

Before You Begin

The ATM Bulk Statistics distribution media includes the following software:

- ATM Bulk Statistics application
- CascadeView tftpserv (the CascadeView tftp daemon)

Before you install the ATM Bulk Statistics application, do the following:

☑ Check the hardware and software requirements listed in Chapter 1.

☑ If you are using Sybase 11x with ATM Bulk Statistics, check that the Sybase 11x server is up and running. If you need to install Sybase 11x, refer to Chapter 3, “Installing Sybase 11x,” for installation instructions. Keep in mind that if the ATM Bulk Statistics is accessing two different Sybase 11x servers, the TCP socket number that is specified in the */etc/services* file should not be the same number as the query port number that is set when you install Sybase 11x.

Installing ATM Bulk Statistics

Figure 2-1 shows the ATM Bulk Statistics installation and configuration sequence.

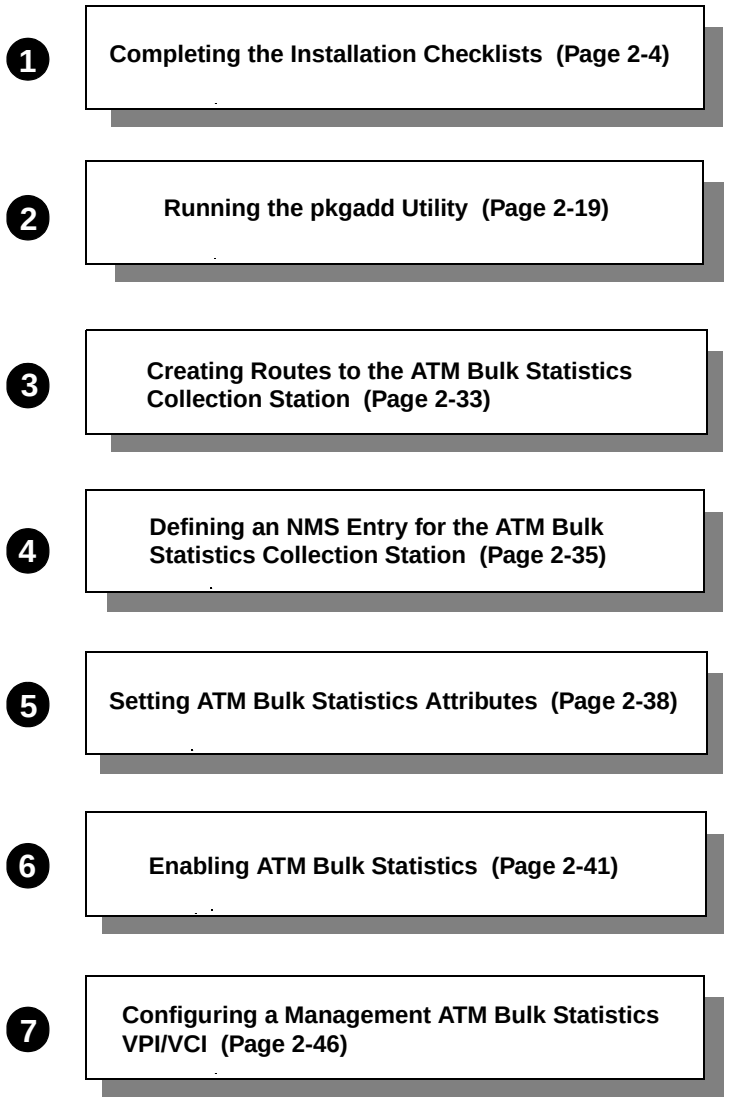


Figure 2-1. ATM Bulk Statistics Installation and Configuration Sequence

Use the steps in the following sections to install and configure ATM Bulk Statistics. Figure 2-2 shows the directory structure used upon installation.

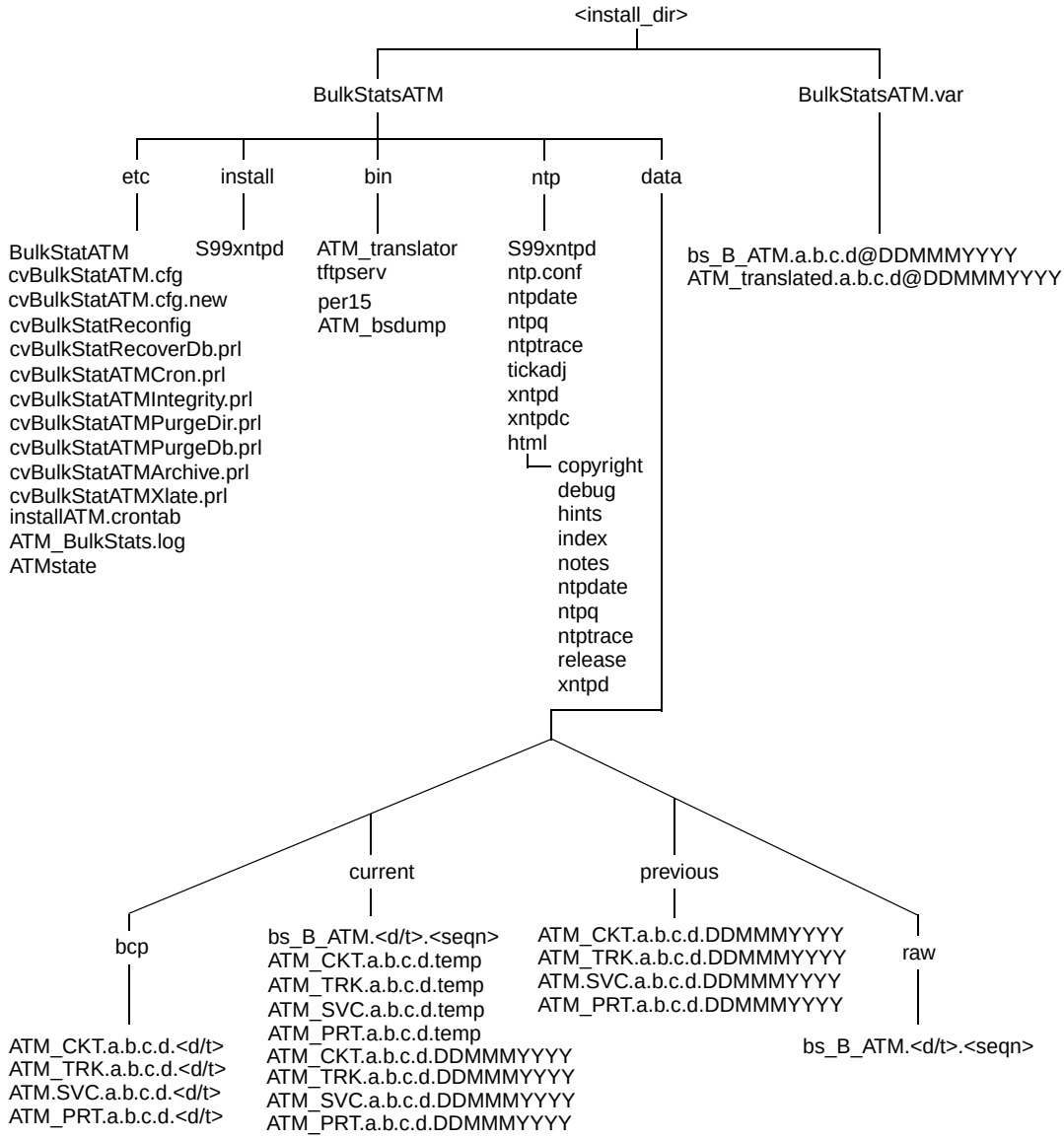


Figure 2-2. ATM Bulk Statistics Directory Structure

Completing the Installation Checklists

The sequence of steps that you use to install ATM Bulk Statistics depends on your site. This section contains four different checklists that specify the installation procedures you should follow for the most common ATM Bulk Statistics installations.

When you install ATM Bulk Statistics, a copy of tftpserv is copied to *<install_dir>/BulkStatsATM/bin*. If you are using ATM Bulk Statistics on a SPARCstation that is running CascadeView, your system will already have a copy of tftpserv, and the TFTP configuration will have already been specified.

The Installation Checklists instruct you to install Solaris, CDE, Sybase 11x, HP OpenView, and CascadeView. Refer to Chapter 3, "Installing Sybase 11x," for Sybase 11x installation instructions. For installing the other software packages, refer to the "Network Management Station Installation Guide."

Table 2-1 lists four different types of installations and the checklists you should follow. Follow these checklists for both new installations and upgrades.

Table 2-1. Installation Checklists

For This Configuration	Refer to
Single System Installation (not recommended) • Workstation 1 CascadeView HP OpenView Sybase 11x NMS database ATM Bulk Statistics application ATM Bulk Statistics database	Checklist 1, page 2-6
Dual-System Installation • Workstation 1 CascadeView HP OpenView Sybase 11x NMS database • Workstation 2 ATM Bulk Statistics application Sybase 11x ATM Bulk Statistics database	Checklist 2, page 2-7

Table 2-1. Installation Checklists (Continued)

For This Configuration	Refer to
Three-System Installation • Workstation 1 CascadeView Sybase 11x HP OpenView NMS database • Workstation 2 Sybase 11x ATM Bulk Statistics database • Workstation 3 ATM Bulk Statistics application	Checklist 3, page 2-9
Four-System Installation • Workstation 1 CascadeView HP OpenView • Workstation 2 Sybase 11x NMS database • Workstation 3 Sybase 11x ATM Bulk Statistics database • Workstation 4 ATM Bulk Statistics application	Checklist 4, page 2-12

Checklist 1 — Single System Installation

To install ATM Bulk Statistics on a single system:

1. If CascadeView, Solaris, CDE, and HP OpenView are already installed, proceed to Step 2. If not, refer to the *Network Management Station Installation Guide* for installation instructions.
2. Install Sybase 11x. Refer to the *Network Management Station Installation Guide* for installation instructions.
3. If you are using Sybase 11x to store ATM Bulk Statistics data, make sure that the Sybase 11x server is running. Enter the following command to verify that the Sybase 11x server is running:

   ```
   /<install_dir>/sybase11/install/showserver
   ```

   If Sybase 11x is running, the system displays the Sybase 11x process status.

   If Sybase 11x is not running, enter the following command:

   ```
   startserver -f RUN_CASCBSTAT
   ```

4. Start the installation script. Refer to "Running the pkgadd Utility" on page 2-15.
5. If this is a new installation, or you are going to monitor more CBX 500s than before, define an NMS entry for the ATM Bulk Statistics Collection Station on each CBX 500. Refer to "Defining an NMS Entry for the ATM Bulk Statistics Collection Station" on page 2-29.

Testing the Configuration

Before starting ATM Bulk Statistics collection from the ATM Bulk Statistics Collection Station, make sure that you can "ping" the following devices:

- ATM Bulk Statistics Collection Station
- NMS Sybase 11x server (if it is different)
- Ethernet address of the gateway switch
- The internal IP address of all CBX 500s from which you will be gathering statistics

If you cannot ping these devices, the ATM Bulk Statistics software will fail.

Running ATM Bulk Statistics

Refer to Chapter 4, "Running ATM Bulk Statistics," for instructions.

Checklist 2 — Dual System Installation

To install ATM Bulk Statistics on a dual system:

1. Install Solaris, CDE, Sybase 11x, HP OpenView, and CascadeView on System 1, if not already done. If you need to install Sybase 11x, refer to the *Network Management Station Installation Guide* for installation instructions.
2. Install Sybase 11x on System 2. Refer to Chapter 3, "Installing Sybase 11x," for installation instructions. To upgrade Sybase 11x, refer to the *Sybase 11 SQL Server Upgrade Guide*.
3. If you are using Sybase 11x to store ATM Bulk Statistics data, enter the following command to verify that the Sybase 11x server is running:

   `/<install_dir>/sybase11/install/showserver`

   If Sybase 11x is running, the system displays the Sybase 11x process status.

   If Sybase 11x is not running, enter the following command:

   `startserver -f RUN_CASCBSTAT`
4. Review the following installation prerequisites:
   - Use CASCBSTAT as the ATM Bulk Statistics Sybase 11x server name rather than CASCADE.
   - In this configuration, ATM Bulk Statistics is accessing two different Sybase 11x servers. Therefore, the TCP socket number that is specified in the */etc/services* file should not be the same number as the query port number that is set when you installed Sybase 11x. Refer to the *Network Management Station Installation Guide* or the appropriate Sybase 11x documentation for more information about how to specify the TCP socket number and the Sybase 11x query port number.
5. Start the installation script on System 2 (the ATM Bulk Statistics Collection Station). Refer to "Running the pkgadd Utility" on page 2-15.
6. If this is a new installation, or you are going to monitor more CBX 500s than before, define an NMS Entry for the ATM Bulk Statistics Collection Station on each CBX 500 that you plan to collect statistics from. Refer to "Defining an NMS Entry for the ATM Bulk Statistics Collection Station" on page 2-29.
7. To access the ATM Bulk Statistics Sybase 11x server, set the DSQUERY environment variable to the server name you specified when you installed ATM Bulk Statistics on the Sybase 11x server (CASCBSTAT is the default). The server name is the same as the server name that you specify during installation of ATM Bulk Statistics. It should also match the DSQUERY environment variable in */<install_dir>/BulkStatsATM/etc/cvBulkStatATM.cfg*.

   If you maintain the NMS switch configuration information on one Sybase 11x server and the ATM Bulk Statistics information on a second Sybase 11x server, you can access either Sybase 11x server from an isql application by setting the DSQUERY environment variable.

Testing the Configuration

Before starting ATM Bulk Statistics from the ATM Bulk Statistics Collection Station, make sure that you can “ping” the following devices:

- ATM Bulk Statistics Collection Station
- NMS Sybase 11x server (if it is different)
- Ethernet address of the gateway switch
- The internal IP address of all CBX 500s from which you will be gathering statistics

If you cannot ping these devices, the ATM Bulk Statistics software will fail.

Running ATM Bulk Statistics

Refer to Chapter 4, “Running ATM Bulk Statistics,” for instructions.

Checklist 3 — Three-System Installation

To install ATM Bulk Statistics on a three-system configuration:

1. Install Solaris, CDE, Sybase 11x, HP OpenView, and CascadeView on System 1, if not already done. Refer to the *Network Management Station Installation Guide* for installation instructions. This system is called the NMS Sybase 11x server. If you are upgrading to Sybase 11x, refer to the *Sybase 11 SQL Server Upgrade Guide*.
2. Install Solaris and CDE on System 2, if not already done. This system is called the ATM Bulk Statistics Sybase 11x server.
3. If you are using Sybase 11x to store ATM Bulk Statistics data, install Sybase 11x on System 2. Refer to Chapter 3, "Installing Sybase 11x," for installation instructions. To upgrade Sybase 11x, refer to the *Sybase 11 SQL Server Upgrade Guide*.

On the ATM Bulk Statistics Sybase 11x Server (System 2):

1. Enter the following command to verify you are logged in as the Sybase 11x user:

   ```
   whoami
   ```

2. Enter the following command to verify that the Sybase 11x server is running:

   ```
   $SYBASE/install/showserver
   ```

   If the server is not running, enter the following commands:

   ```
   cd install
   startserver -f RUN_CASCBSTAT
   ```

3. Edit the following file to set up Network File System (NFS) mounts and export the file system:

   ```
   vi /etc/dfs/dfstab
   ```

4. While holding down the Shift key, type **G** to go to the end of the file.
5. While holding down the Shift key, type **A** and press Return to append a line to the file.
6. Enter the following command:

   ```
   share -f nfs -o rw -d "SYBASE 11" /opt/SYBASE11
   ```

7. Press the Esc key.
8. While holding down the Shift key, type **ZZ** to save and end the file.
9. At the command prompt, enter:

   ```
   shareall
   ```

On each ATM Bulk Statistics Collection Station (System 3):

1. Verify that you are logged in as the root user. You should see a # prompt.
2. Edit the following file to mount the file system:

   `vi /etc/vfstab`
3. While holding down the Shift key, type **G** to go to the end of the file.
4. While holding down the Shift key, type **A** and press Return to append a line onto the file.
5. Enter the following command:

   `<ATMBulkStatSYBASE11host>:/opt/SYBASE11-/opt/SYBASE11nfs-yes-`
6. Press the Esc key.
7. While holding down the Shift key, type **zz** to save and end the file.
8. At the command prompt, enter:

   `mkdir /opt/SYBASE11`

   `mount /opt/SYBASE11`
9. To add the Sybase 11x host IP address and Sybase 11x host name to the host file, enter the following command:

   `vi ./etc/host`
10. While holding down the Shift key, type **G** to go to the end of the file.
11. While holding down the Shift key, type **A** and press Return to append a line onto the file.
12. Add the following line to the file:

    `<SYBASE11 host IP> <SYBASE11 host name>`
13. Press the Esc key.
14. While holding down the Shift key, type **zz** to save and end the file.
15. Enter the following command to make sure that System 2 can access System 1:

    `ping -s <hostname>`

Perform the following steps on each ATM Bulk Statistics Collection Station:

1. Start the ATM Bulk Statistics installation script. Refer to "Running the pkgadd Utility" on page 2-15.
2. If this is a new installation or if you are going to monitor more CBX 500s than before, define an NMS Entry for the ATM Bulk Statistics Collection Station on each CBX 500 you plan to collect statistics from. Refer to "Defining an NMS Entry for the ATM Bulk Statistics Collection Station" on page 2-29.
3. To access the ATM Bulk Statistics Sybase 11x server, set the DSQUERY environment variable to the server name that was specified at the time of the ATM Bulk Statistics Sybase 11x server installation (CASCBSTAT is the default). This server name is the same as the server name that you specify during installation of ATM Bulk Statistics. It should also match the DSQUERY environment variable in */<install_dir>/BulkStatsATM/etc/cvBulkStat.cfg*.

   If you maintain the NMS switch configuration information on one Sybase 11x server and the ATM Bulk Statistics information on a second Sybase 11x server, you can access either Sybase 11x server from an isql application by setting the DSQUERY environment variable.

Testing the Configuration

Before starting ATM Bulk Statistics collection from the ATM Bulk Statistics Collection Station, make sure that you "ping" the following devices:

- ATM Bulk Statistics Collection Station
- NMS Sybase 11x server (if it is different)
- Ethernet address of the gateway switch
- The internal IP address of all CBX 500s from which you will be gathering statistics

If you cannot ping these devices, the ATM Bulk Statistics software will fail.

Running ATM Bulk Statistics

Refer to Chapter 4, "Running ATM Bulk Statistics," for instructions.

Checklist 4 — Four-System Installation

To install ATM Bulk Statistics on a four-system configuration:

1. Solaris, CDE, HP OpenView, and CascadeView should already be installed on System 1. If not, refer to the *Network Management Station Installation Guide* for instructions on how to install these products.
2. Solaris, CDE, and Sybase 11x should already be installed on System 2. If not, refer to the *Network Management Station Installation Guide* for installation instructions. If you are upgrading to Sybase 11x, refer to the *Sybase 11 SQL Server Upgrade Guide*.
3. Install Solaris and CDE on System 3 (the workstation that will hold the ATM Bulk Statistics database). Refer to the *Network Management Station Installation Guide* for instructions on how to install these products.
4. If you are using Sybase 11x to store ATM Bulk Statistics data, install Sybase 11x on System 3. Refer to Chapter 3, “Installing Sybase 11x,” for Sybase 11x installation instructions. To upgrade Sybase 11x, refer to the *Sybase 11 SQL Server Upgrade Guide*.

On the ATM Bulk Statistics Sybase 11x Server (System 3):

1. Enter the following command to verify that you are logged in as the Sybase 11x user:

   ```
   whoami
   ```

2. Enter the following command to verify that the Sybase 11x server is running:

   ```
   $SYBASE/install/showserver
   ```

   If the server is not running, enter the following commands:

   ```
   cd install
   startserver -f RUN_CASCBSTAT
   ```

3. Edit the following file to set up Network File System (NFS) mounts and export the file system:

   ```
   vi /etc/dfs/dfstab
   ```

4. While holding down the Shift key, type **G** to go to the end of the file.
5. While holding down the Shift key, type **A** and press Return to append a line onto the file.
6. Enter the following command:

   ```
   share -f nfs -o rw -d “SYBASE 11” /opt/SYBASE 11
   ```

7. Press the Esc key.
8. While holding down the Shift key, type **zz** to save and end the file.
9. At the command prompt, enter:

   ```
   shareall
   ```

On each ATM Bulk Statistics Collection Station (System 4):

1. Verify that you are logged in as the root user. You should see a # prompt.
2. Edit the following file to mount the file system:

   `vi /etc/vfstab`
3. While holding down the Shift key, type **G** to go to the end of the file.
4. While holding down the Shift key, type **A** and press Return to append a line onto the file.
5. Enter the following command:

   `<BulkStatSYBASE11host>:/opt/SYBASE11-/opt/SYBASE11nfs-yes -`
6. Press the Esc key.
7. While holding down the Shift key, type **zz** to save and end the file.
8. At the command prompt, enter:

   `mkdir /opt/SYBASE11`

   `mount /opt/SYBASE11`
9. To add the Sybase 11x host IP address and Sybase 11x host name to the host file, enter the following command:

   `vi ./etc/host`
10. While holding down the Shift key, enter **G** to go to the end of the file.
11. While holding down the Shift key, enter **A** and press Return to append a line onto the file.
12. Add the following line to the file:

    `<SYBASE11 host IP> <SYBASE11 host name>`
13. Press the Esc key.
14. While holding down the Shift key, enter **zz** to save and end the file.
15. Enter the following command to make sure that System 2 can access System 1:

    `ping -s hostname`

Perform the following steps on each ATM Bulk Statistics Collection Station:

1. Start the ATM Bulk Statistics installation script. Refer to "Running the pkgadd Utility" on page 2-15.
2. If this is a new installation of ATM Bulk Statistics or if you are going to monitor more CBX 500s than before, define an NMS Entry for the ATM Bulk Statistics Collection Station on each CBX 500 that you plan to collect statistics from. Refer to "Defining an NMS Entry for the ATM Bulk Statistics Collection Station" on page 2-29.
3. To access the ATM Bulk Statistics Sybase 11x server, set the DSQUERY environment variable to the server name that was specified at the time of the ATM Bulk Statistics Sybase 11x server installation (CASCBSTAT is the default). The server name is the same as the server name that you specify during installation of ATM Bulk Statistics. It should also match the DSQUERY environment variable in */<install_dir>/BulkStats/etc/cvbulkstat.cfg.*

   If you maintain the NMS switch configuration information on one Sybase 11x server and the ATM Bulk Statistics information on a second Sybase 11x server, you can access either Sybase 11x server from an isql application by setting the DSQUERY environment variable.

Testing the Configuration

Before starting ATM Bulk Statistics collection from the ATM Bulk Statistics Collection Station, make sure that you can "ping" the following devices:

- ATM Bulk Statistics Collection Station
- NMS Sybase 11x server (if it is different)
- Ethernet address of the gateway switch
- The internal IP address of all CBX 500s from which you will be gathering statistics

If you cannot ping these devices, the ATM Bulk Statistics software will fail.

Running ATM Bulk Statistics

Refer to Chapter 4, "Running ATM Bulk Statistics," for instructions.

Running the pkgadd Utility

The pkgadd utility transfers the contents of the ATM Bulk Statistics software package from the distribution media or directory to the installation directory you specify on your system. A link called *ATMBulkStats* is automatically created at the '/' level and is linked to *<install_dir>/ATMBulkStats*.

The pkgadd utility automatically updates the configuration file with the configuration values you specify when you run the pkgadd utility. For detailed information on the pkgadd utility, refer to your Sun Microsystems documentation.

You must be a root user to install the ATM Bulk Statistics software package.

Figure 2-3 shows the sequence of steps you use when running the pkgadd utility.

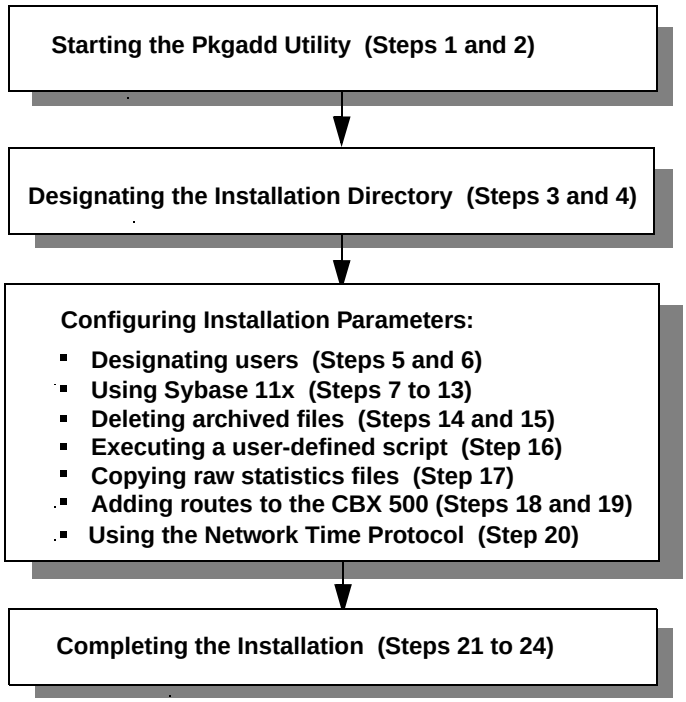


Figure 2-3. Running the Pkgadd Utility

1. At the system prompt, enter the following command:

   pkgadd -d <*pathname to tape device*>

   The pkgadd utility displays the following prompt:

   ```
   The following packages are available:
     1 CASCbkstsBulk Statistics
               (Sparc) 01.00.00.B
   ```

2. The pkgadd utility then prompts you to select the package.

   ```
   Select package(s) you wish to process (or 'all' to process
   all packages). (default: all) [?,??,q]:
   ```

   Enter **1** to install ATM Bulk Statistics.

3. The pkgadd utility then prompts you for the base directory in which to install ATM Bulk Statistics.

   ```
   Enter path to package base directory [?,q]:
   ```

   Enter the directory in which you want to install ATM Bulk Statistics.
   For example: **/opt**

4. The pkgadd utility then prompts you to confirm your decision.

   ```
   <directory> has been selected as the package base.
   To accept this directory, press [enter] or to
   change this, enter a new directory.
   ```

   Press Return to accept the directory or enter a different directory.

5. The pkgadd utility then prompts you to enter the name of each user that is authorized to use ATM Bulk Statistics.

   ```
   Enter in all users that will be executing Bulk Stats
   Processing (comma delimited):
   ```

   Enter the names of all authorized ATM Bulk Statistics users.
   For example: **renfield, roosevelt**

6. The pkgadd utility then prompts you to enter the group name that the ATM Bulk Statistics users belong to.

   ```
   Enter in the group that the users will belong to
   (8 chars max) <bulkstat>
   ```

   Press Return to accept the default group name or enter a different group name.

7. You have the option of using Sybase 11x with ATM Bulk Statistics to store statistical data. At this point in the installation, you are prompted as to whether or not you are using Sybase 11x.

   ```
   Enter 'y' or 'n' if you will be using Sybase.
   ```

   Perform one of the following steps:

   a. Enter **y** to indicate that you will be using Sybase 11x Bulk Copy to import the delta and peak calculations to the ATM Bulk Statistics Sybase 11x database.

   b. Enter **n** to indicate that you do not plan to use Sybase 11x to store the delta and peak calculations. Skip to step 14 on page 2-18.

8. If you entered **y** in Step 7, the pkgadd utility prompts you for the Sybase 11x directory name.

   ```
   You have elected to use Sybase.
   Enter the directory where Sybase is installed
   </opt/sybase11>
   ```

   Press Return to accept the default Sybase 11x directory or enter a different directory.

9. The pkgadd utility then prompts you for the Sybase 11x database server name.

   ```
   Enter the Sybase database server name <CASCADE_SBY11>
   ```

   Press Return to accept the default Sybase 11x database server name or enter a different database server name.

10. The pkgadd utility then prompts you for the Sybase 11 database name.

    ```
    Enter the database name you wish to use (minimum of 6 char)
    <cascstat>
    ```

    Press Return to accept the default database or enter a different database name.

11. The pkgadd utility then prompts you for the Sybase 11x system administrator user name.

    ```
    Enter the Sybase system administrator user name <sa>
    ```

    Press Return to accept the default Sybase 11x system administrator user name or enter a different name.

12. The pkgadd utility then prompts you for the Sybase 11x system administrator password.

    ```
    Enter the Sybase system administrator password <superbase>
    ```

    Press Return to accept the default Sybase 11x system administrator password or enter a different password.

13. The pkgadd utility then prompts you for the maximum number of days to keep data in the Sybase 11 database.

```
Enter the max number of days to keep data in the database
<30>
```

Press Return to accept the default value or enter a different value.

14. The pkgadd utility then prompts you for the directory you want to place the *BulkStatsATM.var* directory archive.

```
Enter the directory you wish to place the BulkstatsATM.var
directory archive </opt>
```

Press Return to accept the default directory or enter a different directory.

15. The pkgadd utility then prompts you for the maximum number of days to keep archived files.

```
Enter the max number of days to keep archived files <7>
```

Press Return to accept the default value or enter a different value.

16. The pkgadd utility then prompts you for the full pathname of any user-defined script you want to run after the archive operation.

```
Enter the full pathname to any user-defined script you would
like to run after the archive operation <none>
```

Press Return to accept the default value or enter a different value.

17. The pkgadd utility then prompts you for where you want the CBX 500 to copy the raw ATM statistics files.

```
Enter in where you would like the switch to copy the raw
stats files to </tftpboot/bulkstats>
```

Press Return to accept the */tftpboot/bulkstats* directory or enter a different directory.

18. The pkgadd utility then prompts you as to whether or not you want to add a route to the CBX 500 during installation.

```
Enter ‘y’ or ‘n’ if you’d like to add a host or network
route.
```

Perform one of the following steps:

a. Enter **n** to indicate that you do not want to add a host or network route. Go to Step 20.

b. Enter **y** to indicate that you want to add a host or network route. The pkgadd utility then prompts you for either a host or network route.

```
Enter ‘h’ to add a host or ‘n’ to add a network route.
```

Enter **h** or **n**.

The pkgadd utility then prompts you for the host or network address, gateway, and metric.

```
Please enter the [host, network] address
```

Enter the **<host** or **network address>**.

```
Please enter the [host,network] gateway
```

Enter the **<host** or **network gateway>**.

```
Please enter the [host, network] metric
```

Enter the <**host** or **network metric**>.

A message is displayed stating if the operation was successful. If there are any errors, they are displayed on the screen. (You will need to manually correct the errors.)

The pkgadd utility will continue to ask you whether or not you want to add a host or network route to your system. If you are finished, enter any key except ‘h’, ‘n’, or ‘d’ to exit.

19. The pkgadd utility then prompts you to confirm your choice.

```
Enter [y/n] to confirm your decision.
```

Enter the **y** to confirm your decision or **n** to return to Step 18.

20. The pkgadd utility then prompts you to decide if you want to install and execute the Network Time Protocol (NTP) on this server. Refer to "Network Time Protocol (NTP)" on page 1-9 for information about NTP.

```
The CascadeView Bulk Statistics Collector provides a version
of the Network Time Protocol (NTP) that is used to
synchronize the time-of-day clocks for all Cascade switches
that generate Bulk Statistics data in your network.

Do you wish to install and execute the Network Time Protocol
on this server [y/n]?
```

Enter **y** to install and execute NTP or **n** if you do not want to install NTP.

21. The pkgadd utility then begins to process the information and displays the following messages:

```
## Processing package information.
## Processing system information.
## Verifying package dependencies.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with
super-user permissions during the process of installing this
package.
```

22. The pkgadd utility then prompts you to continue with the installation.

```
Do you want to continue with the installation of this
package? [y,n,?]
```

Perform one of the following steps:

a. Enter **y** to continue with the installation.

b. Enter **n** to terminate the installation.

If you enter **y**, the pkgadd utility installs ATM Bulk Statistics with the installation parameter values you specified. The pkgadd utility then displays the created directories. (Refer to Figure 2-2 on page 2-3 for an overview of the ATM Bulk Statistics directory structure.)

23. If a Sybase 11x database already exists, the following prompt is displayed:

```
A Sybase database with the name <name> already exists.
Creating the ATM Bulk Statistic Sybase database using this
name will erase all of its existing data.

Do you want to overwrite it? [y/n]
```

Perform one of the following steps:

a. Enter **y** to overwrite the existing database. When the database is overwritten, all existing data is deleted. (This includes all B-STDX Bulk Statistics tables as well.) The pkgadd utility displays the following message:

```
Existing Sybase database <name> being overwritten. Hang on.
this might take several minutes.
```

b. Enter **n** if you do not want to overwrite the existing database. The pkgadd utility displays the following messages:

```
Existing SYBASE 11 database <name> not overwritten...
continuing.
```

The pkgadd utility then checks to make sure the tables exist and prompts you if you want to overwrite each table it locates.

Enter **y** to overwrite the table or **n** if you do not want to overwrite the table.

24. If you specify an ATM Bulk Statistics database that does not currently exist, the pkgadd utility displays the following prompt:

```
<database name> does not exist as a SYBASE 11 database.
Create <name> ? [y/n]
```

Perform one of the following steps:

a. Enter **y** to create the database. The following message is displayed:

```
Creating <name> as the ATMBulk Statistics SYBASE
11 database.
```

The database creation process may take a few minutes.

The pkgadd utility then displays Sybase 11x installation information. If Sybase 11x encounters fatal errors, they are written to the */tmp/cvbulkstat_db_name.txt* directory. You need to resolve the Sybase 11x errors before you can continue with the installation process. Refer to the *Sybase 11 SQL Server Error Message Reference* for more details about Sybase 11x error messages.

If the installation was successful, the pkgadd utility displays the following message to confirm that the installation is complete:

```
Installation of <package name> was successful.
```

b. Enter **n** if you do not want to create the database. The pkgadd utility aborts the installation.

The Configuration File

When you install ATM Bulk Statistics for the first time, the system uses a configuration file template named *cvBulkStatATM.cfg.new*. It then copies the file to *cvBulkStat.cfg* during installation.

If you install ATM Bulk Statistics as an upgrade, the pkgadd utility uses the existing configuration file and changes any new values in the file. The *cvBulkStatATM.cfg* file is included in the */<install_dir>/BulkStatsATM/etc* directory. Figure 2-4 on page 2-23 illustrates an example of the *cvBulkStat.cfg* file.

The DSQUERY variable in the cvBulkStatATM.cfg file will vary depending on your system's configuration. During installation, you are prompted for this server name.

```
#  Copyright 1997 Cascade Communications Corp.
#  All rights reserved.
#  Default path to installation tree
ATM_BULKSTATS=/opt
#  Default path to SYBASE 11 directory
ATM_SYBASE =/opt/<install_path>
#  Users permitted to run Bulk Stats Processing
#  Group these users belong to
ATM_USERS=root
ATM_GROUP=bulkstat
#  Default Bulk Statistics SYBASE 11 database server name
ATM_DSQUERY=CASCBSTAT
#  Default Bulk Statistics SYBASE 11 database configuration
#  bulk copy option (y/n)
#  - databasename
#  - username
#  - password
#  - purge age (i.e., maximum lifetime of data in database)
ATM_CVBSTAT_DB_BCP=y
ATM_CVBSTAT_DB_NAME=cascstat
ATM_CVBSTAT_DB_USER=sa
ATM_CVBSTAT_DB_PASSWORD=superbase
ATM_CVBSTAT_DB_LIFETIME=30
#  Default archive directory
#  Must specify the full path to the archive directory
ATM_CVBSTAT_ARC_DIR=/opt/BulkStatsATM.var
# Default raw stat file directory
# Directory where untranslated switch files reside
ATM_TFTPBOOT=/tftpboot
#  User define shell script to run after the archive
operation
#  Must specify the full path to the shell script
ATM_CVBSTAT_ARC_FUNC=none
# Archived files lifetime (in days)
ATM_CVBSTAT_ARC_LIFETIME=7
```

Figure 2-4. ATM Bulk Statistics Configuration File

The ReConfig Script

The ReConfig Script allows you to change configuration values after you have installed ATM Bulk Statistics. You can change the following configuration values without having to reinstall the entire software package:

- The tftpboot directory
- Use of the Sybase 11x database
- The lifetime of data before it is purged from the Sybase 11x database
- The lifetime of all archived data
- User-defined archive functions

The ReConfig Script is located in the *<install_dir>/BulkStatsATM/etc/cvBulkStatReconfig* directory.

Removing the ATM Bulk Statistics Software Package

If you need to remove the ATM Bulk Statistics software package, do the following steps:

You must be a root user to remove the ATM Bulk Statistics software package.

1. At the system prompt, enter the following command:

   `pkgrm`

   The pkgrm utility displays a list of currently installed software packages. The list depends on what software packages you have installed on your system. For example:

   ```
   The following packages are available:
     1 CASCbkstsBulk Statistics
               (Sparc) 01.00.00.B
     2 CASCacctATM Accounting
               (Sparc) 01.00.00.B
   ```

2. The pkgrm utility then prompts you to select the package you want to remove.

   ```
   Select package(s) you wish to process.
   ```

   Enter the number of the Bulk Statistics package.

3. The pkgrm utility then prompts you if you really want to remove the package.

   ```
   Do you want to remove this package? [y, n]:
   ```

   Enter **y**.

4. The pkgrm utility then prompts you to continue.

   ```
   This package contains scripts which will be executed with
   super-user permission during the process of removing this
   package.

   Do you want to continue with the removal of this package?
   ```

   Enter **y**.

   The pkgrm utility lists all the files associated with the package that are being removed. When the removal is complete, the following message is displayed:

   ```
   Removal of <CASCbksts> was successful.
   ```

Upgrade Procedure

If you need to upgrade your system to a newer version of the ATM Bulk Statistics application, you will need to run the pkgadd upgrade procedure. The following section describes how to run the pkgadd upgrade procedure.

Getting Started

Before you run the pkgadd upgrade procedure, keep the following in mind:

- ☑ Only two instances of the ATM Bulk Statistics application can be installed on an ATM Bulk Statistics Collection Station (the Collector) simultaneously. To perform a software upgrade where there are two instances of the ATM Bulk Statistics application installed on the Collector, you must first run the pkgrm utility to remove the oldest version of the software. Refer to "Removing the ATM Bulk Statistics Software Package" on page 2-24 for instructions on running the pkgrm utility.

- ☑ When upgrading to a new version of the ATM Bulk Statistics application, all files that are not part of the upgrade, such as translated files and raw statistics files, remain on the system.

- ☑ If you do not specify the installation directory where the old version of the ATM Bulk Statistics application resides, the upgrade procedure will not work. To correct this, you must remove the new version and then run the pkgadd upgrade procedure again. Refer to "Removing the ATM Bulk Statistics Software Package" on page 2-24 for instructions on running the pkgrm utility.

Upgrading the Software

To upgrade the ATM Bulk Statistics application, do the following:

1. At the system prompt, enter the following command:

   `pkgadd <install_dir>`

2. The pkgadd utility then prompts you for the base directory in which to install ATM Bulk Statistics.

   ```
   Enter path to package base directory [?,q]:
   ```

   Enter the pathname to where the old version of the ATM Bulk Statistics application resides.

3. The pkgadd utility then asks you if you want to overwrite the existing software files:

   ```
   Do you want to overwrite the existing software files?
   ```

   Enter **y** to install the new version of the ATM Bulk Statistics application.

Creating Routes to the ATM Bulk Statistics Collection Station

For the ATM Bulk Statistics Collection Station (the Collector) to communicate properly with the network, you must create routes from the network to the Collector that is servicing that network. This is done using the NMS Path function of CascadeView. Before you begin, make sure you have completed the following:

- ☑ The CBX 500 switch hardware is up and running. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView SPARCstation is properly connected to the CBX 500 switch. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView software is up and running on the CascadeView SPARCstation and you are logged in. The instructions in this section assume that you have created a network map, added the CBX 500 switch object to the map, and specified the attributes for the CBX 500 switch. Refer to the *Network Configuration Guide for CBX 500* for instructions.

1. On the network map, select the CBX 500 you are using as the gateway switch.
2. From the Administer menu, select Cascade Parameters ⇒ Set NMS Paths. The Set NMS Paths dialog box opens.

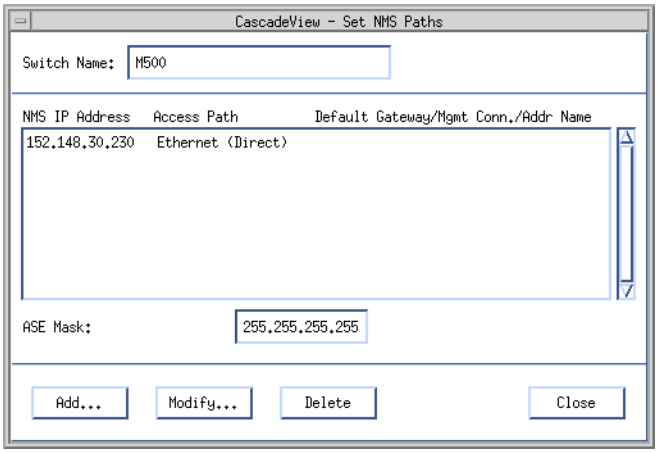


Figure 2-5. Set NMS Paths Dialog Box

3. Choose the Add button. The Add NMS Path dialog box opens.

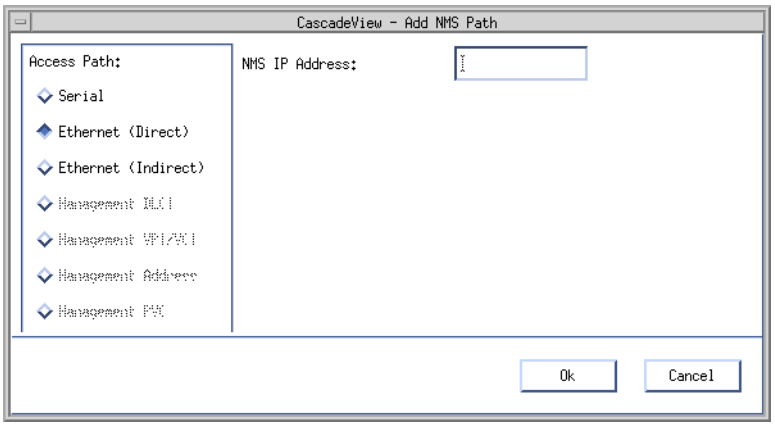


Figure 2-6. Add NMS Path Dialog Box

To complete this dialog box:

a. In the Access Path field, select the connection method you used to connect the Collector to the network (direct Ethernet, indirect Ethernet, or Management Address).

b. In the NMS IP Address field, enter the IP address of the Collector.

c. If you connected the Collector via indirect Ethernet, enter the IP address of the router in the Default Gateway IP Address field.

4. Choose the Ok button to add the Collector to the NMS Path list. The Set NMS Paths dialog box opens (Figure 2-5 on page 2-27).

5. Repeat Step 3 for each Collector that is connected to this network. When you have finished, choose the Close button from the Set NMS Paths dialog box to return to the network map.

Defining an NMS Entry for the ATM Bulk Statistics Collection Station

You must define an NMS entry for the ATM Bulk Statistics Collection Station (the Collector) on each CBX 500 from which you plan to collect ATM statistics.

Before you begin, make sure you have completed the following:

- ☑ The CBX 500 switch hardware is up and running. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView SPARCstation is properly connected to the CBX 500 switch. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView software is up and running on the CascadeView SPARCstation and you are logged in. The instructions in this section assume that you have created a network map, added the CBX 500 switch object to the map, and specified the attributes for the CBX 500 switch. Refer to the *Network Configuration Guide for CBX 500* for instructions.

To define an NMS entry for the Collector, do the following:

1. On the network map, select the CBX 500 you want to configure.
2. From the Administer menu, select Cascade Parameters ⇒ Set Parameters. The CBX 500 back panel display opens.
3. Choose the Set Sw Attr button. The Set Switch Attributes dialog box opens. For information on the Set Switch Attributes dialog box, refer to the *Network Configuration Guide for CBX 500*.
4. Choose the NMS Entries button. The Set NMS Entries dialog box opens, displaying the current NMS entries.

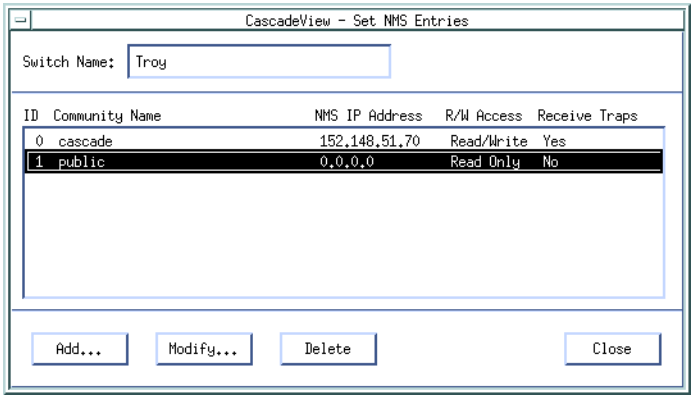


Figure 2-7. Set NMS Entries Dialog Box

5. Choose the Add button. The Add NMS Entry dialog box opens.

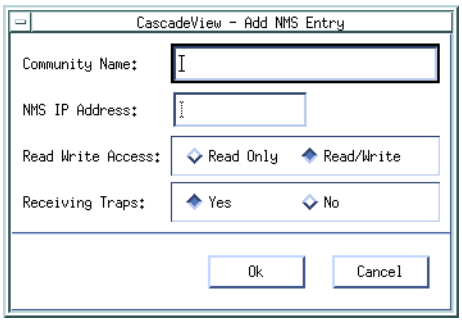


Figure 2-8. Add NMS Entry Dialog Box

6. Enter the community name and IP address for the target Collector. Do not enter an existing community name. This will prevent ATM Bulk Statistics from collecting data.
7. Choose Read/Write as the access rights for this Collector.
8. Select **No** if the workstation is only used for ATM Bulk Statistics collection. (Consequently, the Collector does not receive traps.) Select **Yes** if the Collector is also used as an NMS workstation.

If you need to modify the Community Name, you must first edit this dialog box and then edit the value CV_SNMP_READ_WRITE_ COMMUNITY in the cascadeview.cfg file.

9. Choose the Ok button to set the parameters. The Set NMS Entries dialog box opens.
10. If you are done with the Set NMS Entries dialog box, choose the Close button. You are returned to the Set Switch Attributes dialog box.
11. Choose the Close button to return to the CBX 500 back panel display.

Setting ATM Bulk Statistics Attributes

Each CBX 500 in the network must have an ATM Bulk Statistics Collection Station address assigned to it. The assignments of the CBX 500-to-ATM Bulk Statistics Collection Stations are done using CascadeView.

Before you begin, make sure you have completed the following:

- ☑ The CBX 500 switch hardware is up and running. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView SPARCstation is properly connected to the CBX 500 switch. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView software is up and running on the CascadeView SPARCstation and you are logged in. The instructions in this section assume that you have created a network map, added the CBX 500 switch object to the map, and specified the attributes for the CBX 500 switch. Refer to the *Network Configuration Guide* for CBX 500 for instructions.

To assign an ATM Bulk Statistics Collection Station address to a CBX 500, do the following:

1. On the network map, select the CBX 500 you want to configure.
2. From the Administer menu, select Cascade Parameters ⇒ Set Parameters. The CBX 500 back panel display opens.
3. Chose the Set Sw Attr button. The Set Switch Attributes dialog box opens. For information on the Set Switch Attributes dialog box, refer to the *Network Configuration Guide for CBX 500*.
4. Choose the Bulk Stats button. The Set Bulk Statistics Attributes dialog box opens.

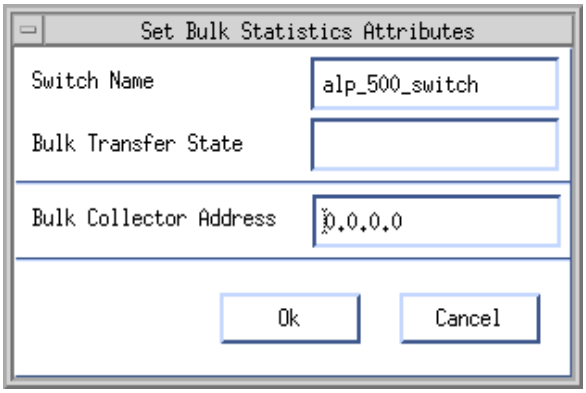


Figure 2-9. Set Bulk Statistics Attributes Dialog Box

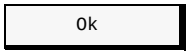
Table 2-2 describes each field in the Set Bulk Statistics Attributes dialog box.

Table 2-2. Set Bulk Statistics Attributes Dialog Box Fields

Field	Action/Description
Switch Name	Displays the name of the CBX 500 entered at configuration time.
Bulk Transfer State	Displays the current ATM Bulk Transfer State. The possible ATM Bulk Transfer States assumed by the CBX 500 are: **Inactive** — ATM Bulk Statistics data is not currently being transferred to the ATM Bulk Statistics Collection Station. **Active** — ATM Bulk Statistics data is being transferred to the ATM Bulk Statistics Collection Station.
Bulk Collector Address	Enter the IP address of the ATM Bulk Statistics Collection Station for the CBX 500 you are using.

Push Buttons

The Set Bulk Statistics Attributes dialog box provides the following push buttons:



Returns you to the Set Switch Attributes dialog box and saves your changes.

Closes the Set Bulk Statistics Attributes dialog box without saving any changes.

Enabling ATM Bulk Statistics

There are two ATM Bulk Statistics states for each installed IOM:

Capability — Whether or not ATM Bulk Statistics is configured

Operational — Whether or not ATM Bulk Statistics is running

The Capability state configures the IOM to support the corresponding ATM Bulk Statistics capability, either Peak Count or Total Count collection. When the Capability state is enabled, the maximum number of Virtual Circuits supported for the IOM is reduced from 8K to 6K. By default, both states are disabled. The Operational state can only be enabled if the Capability state is enabled.

Whenever the Capability state is changed, the IOM must be reset for the change to take effect.

Keep in mind that you can change the Operational setting at any time without resetting the IOM. However, frequent changes of the Operational settings will make it difficult to post-process the collected data.

In general, to enable ATM Bulk Statistics you must:

- Set the Capability state to Enabled
- Set the Operational state to Enabled
- Warm boot the IOM

You should enable ATM Bulk Statistics before creating any VCs on a given IOM. That way, the maximum number of VCs are fixed and subsequent IOM resets are not required.

Before you begin, make sure you have completed the following:

- ☑ The CBX 500 switch hardware is up and running. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView SPARCstation is properly connected to the CBX 500 switch. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView software is up and running on the CascadeView SPARCstation and you are logged in. The instructions in this section assume that you have created a network map, added the CBX 500 switch object to the map, and specified the attributes for the CBX 500 switch. Refer to the *Network Configuration Guide for CBX 500* for instructions.

To enable ATM Bulk Statistics:

1. On the network map, select the CBX 500 you want to configure.
2. From the Administer menu, select Cascade Parameters ⇒ Set Parameters. The CBX 500 back panel display opens.
3. Double click on the desired IOM on the CBX 500 back panel display. The Set Card Attributes dialog box opens. For information on the Set Switch Attributes dialog box, refer to the *Network Configuration Guide for CBX 500*.
4. Choose the Set IOM Attr button. The Set IOM Card Attributes dialog box opens. For information on the Set IOM Card Attributes dialog box, refer to the *Network Configuration Guide for CBX 500.*
5. Choose the Bulk Statistics Configuration button. The Bulk Statistics Configuration dialog box opens.

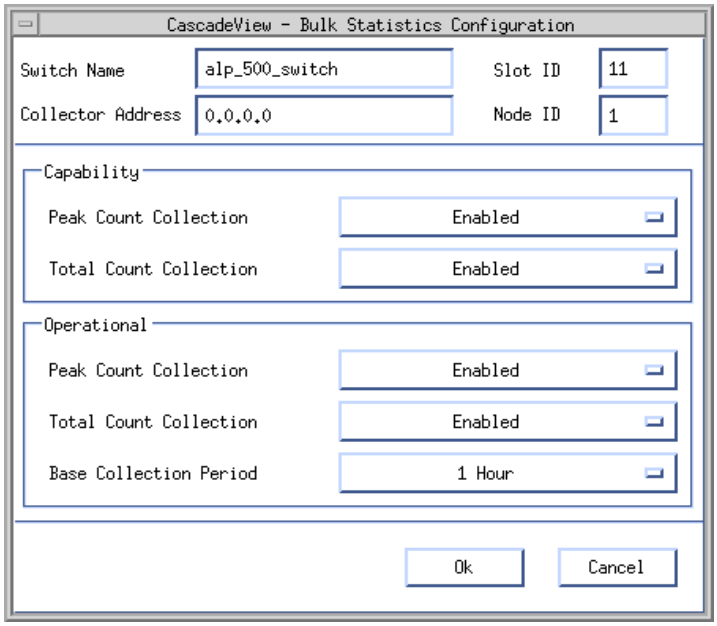


Figure 2-10. Bulk Statistics Configuration Dialog Box

Table 2-3 describes each field in the Bulk Statistics Configuration dialog box.

Table 2-3. Bulk Statistics Configuration Dialog Box Fields

Field	Action/Description
Switch Name	Displays the name of the CBX 500 entered at configuration time.
Collector Address	Displays the IP address of the ATM Bulk Statistics Collection Station you are using.
Slot ID	Displays the slot number where the IOM is installed.
Node ID	Displays the CBX 500 ID.

Table 2-3. Bulk Statistics Configuration Dialog Box Fields (Continued)

Field	Action/Description
Capability: Peak Count Collection	Select Enabled from the option menu. The Peak Count is the maximum count observed within any of the 5-minute periods contained within the Base Collection Period (BCP). For example, there are 12 such 5-minute periods within the default BCP of 1 hour. If you change the BCP in the middle of the current BCP, you will initially receive partial counts at the nearest 5-minute boundary, then partial counts at the nearest multiple of the new BCP. For example, if the original BCP is 15 minutes, and you change the BCP to 20 minutes at 12:07, you will get 10-minute statistics at 12:10, followed by 10-minute statistics at 12:20, and then the full 20-minute statistics at 13:00. ***Note:*** *Enabling Peak Count Collection limits the number of supported VCs on an IOM from 8K to 6K.*
Capability: Total Count Collection	Select Enabled from the option menu. The Total Count is the sum of all collections over a given interval. ***Note:*** *Enabling Total Count Collection limits the number of supported VCs on an IOM from 8K to 6K.*
Operational: Peak Count Collection	Select Enabled from the option menu.
Operational: Total Count Collection	Select Enabled from the option menu.
Operational: Base Collection Period	Based on your requirements for ATM Bulk Statistics collection, select the appropriate Base Collection Period. You may want to increase or decrease the period over which ATM Bulk Statistics are collected. For example, the default collection period is 1 hour. However, you may want finer granularity. The options are: 15 minutes, 20 minutes, 30 minutes, 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 12 hours, and 24 hours.

Push Buttons

The Bulk Statistics Configuration dialog box provides the following push buttons:

Ok	Returns you to the Set IOM Card Attributes dialog box and saves your changes.
Cancel	Closes the Set Bulk Statistics Configuration dialog box without saving any changes.

Configuring a Management ATM Bulk Statistics VPI/VCI

You use a Management VPI/VCI when the ATM Bulk Statistics Collection Station (the Collector) connects to the gateway switch via an ATM router or ATM Network Interface Card (NIC).

The Collector accesses the gateway switch through this connection. This method of access enables you to monitor the network without the use of an Ethernet module installed in the CBX 500.

After configuring the Management VPI/VCI, remember to add an NMS Path for the Management VPI/VCI. Refer to the Network Configuration Guide for CBX 500 for instructions.

Before you begin, make sure you have completed the following:

- ☑ The CBX 500 switch hardware is up and running. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView SPARCstation is properly connected to the CBX 500 switch. Refer to the *CBX 500 Hardware Installation Guide* for instructions.
- ☑ The CascadeView software is up and running on the CascadeView SPARCstation and you are logged in. The instructions in this section assume that you have created a network map, added the CBX 500 switch object to the map, and specified the attributes for the CBX 500 switch. Refer to the *Network Configuration Guide for CBX 500* for instructions.

To configure a Management VPI/VCI:

1. From the Administer menu, choose Cascade Parameters ⇒ Set All Management VPI/VCIs. The Set All Management VPI/VCIs dialog box opens.

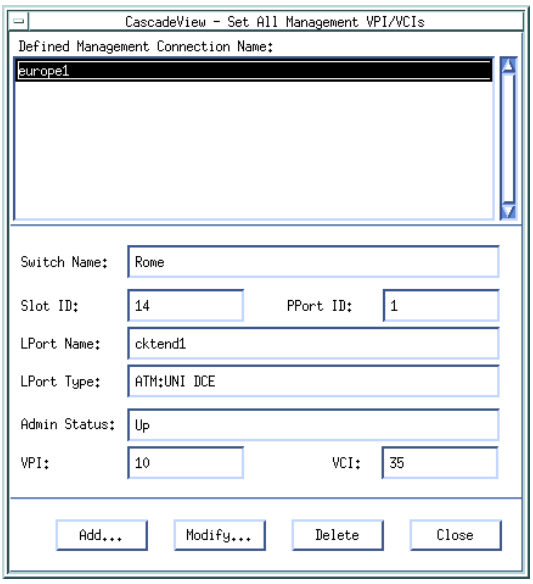


Figure 2-11. Set All Management VPI/VCIs Dialog Box

If you have already configured a Management VPI/VCI, the dialog box displays this information. From the Set All Management VPI/VCI dialog box, you can use the Modify or Delete commands to modify or delete Management VPI/VCI configurations.

2. Choose the Add button. The Select End Logical Port dialog box opens.

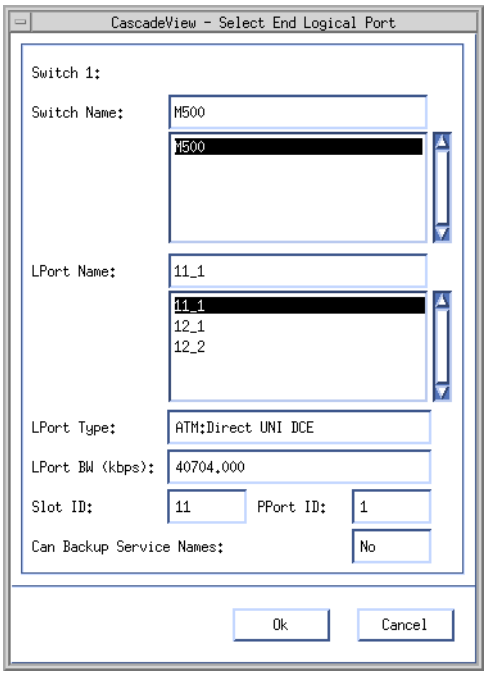


Figure 2-12. Select End Logical Port Dialog Box

Table 2-4 describes each field in the Select End Logical Port dialog box.

Table 2-4. Select End Logical Port Dialog Box Fields

Field	Action/Description
Switch Name	Select the name of the CBX 500 that connects to the router or Network Interface Card (NIC) that serves as the interface for the Network Management VPI/VCI.
LPort Name	Select the name of the logical port you configured to access the router or NIC.
LPort Type	Displays the logical port type.
LPort BW (kbps)	Displays the logical port bandwidth.
Slot ID	Displays the slot number in which the IOM resides.
PPort ID	Displays the port number for the port you are configuring.

3. Choose the Ok button. The Add Management VPI/VCI dialog box opens.

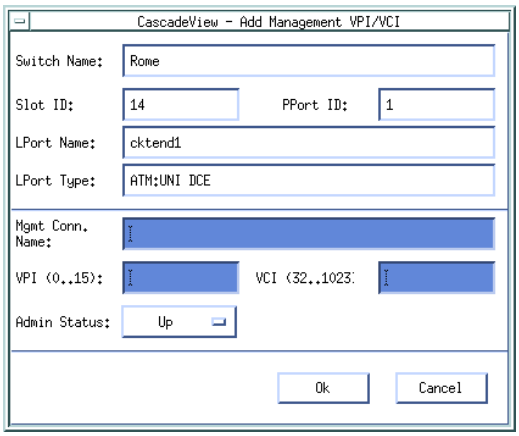


Figure 2-13. Add Management VPI/VCI Dialog Box

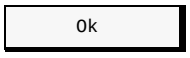
Table 2-5 describes each field in the Add Management VPI/VCI dialog box.

Table 2-5. Add Management VPI/VCI Dialog Box Fields

Field	Action/Description
Switch Name	Displays the name of the CBX 500 that connects to the router that serves as the interface for the Network Management VPI/VCI.
Slot ID	Displays the slot number in which the IOM resides.
PPort ID	Displays the port number for the physical port.
LPort Name	Displays the name of the logical port you configured for the router.
LPort Type	Displays the logical port type.
Management Conn. Name	Enter a unique, continuous, alphanumeric name to identify the connection. Do not use hyphens, dashes, parentheses, or asterisks.
VPI (0..15)	Enter the VPI that is used for the connection.
VCI (32..1023)	Enter the VCI that is used for the connection.
Admin Status	Select either Up or Down to define whether the Management VPI/VCI connection is activated when the switch or port comes on-line.

Push Buttons

The Add Management VPI/VCI dialog box provides the following push buttons:



Returns you to the Select End Logical Port dialog box and saves your changes.

Closes the Add Management VPI/VCI dialog box without saving any changes.

3

Installing Sybase 11x

Sybase 11x SQL Server is a relational database application that manages backup and recovery of database files. This chapter provides instructions for installing Sybase 11x and configuring the local backup server.

Getting Started

If you have an NMS with two drives and you partitioned the boot drive with file systems, you need to partition the second disk using raw partitions. If you have an NMS with one drive and you partitioned that drive using file systems, proceed to "Loading the Cascade-supplied Sybase Media" on page 3-10.

Table 3-1 on page 3-2 lists the recommended partition settings for the second disk.

Table 3-1. Partition Settings

Partition(s)	Function
1 and 3	These partitions are not used.
0	Master device for Sybase.
4	System Procs device for Sybase.
5	CascadeView device for Sybase.
6	Log device for Sybase.
7	Partition used for remainder of unallocated space.

Before you partition the second disk, make sure the disk you are about to partition is not the same disk you partitioned during the Solaris installation.

1. Verify you are logged in as root user. You should see a # prompt in the command tool window. If you are not logged in as root, enter the following command in the command tool window:

   ```
   su - root
   ```

2. When prompted, enter your root password.
3. At the # prompt, enter:

   ```
   format
   ```

4. At the “Specify disk (enter its number)” prompt, enter the disk not partitioned during the Solaris installation. If you enter the disk that was already partitioned, the system displays the Partition Warning window, as shown in Figure 3-1 on page 3-2.

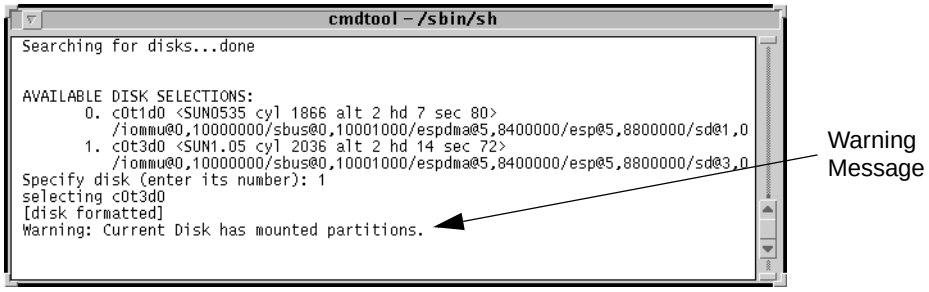


Figure 3-1. Partition Warning Window

5. At the format prompt, enter:

   `quit`

6. Go to back to step 4 and select the disk that you did not partition.

   The system displays the Format menu.

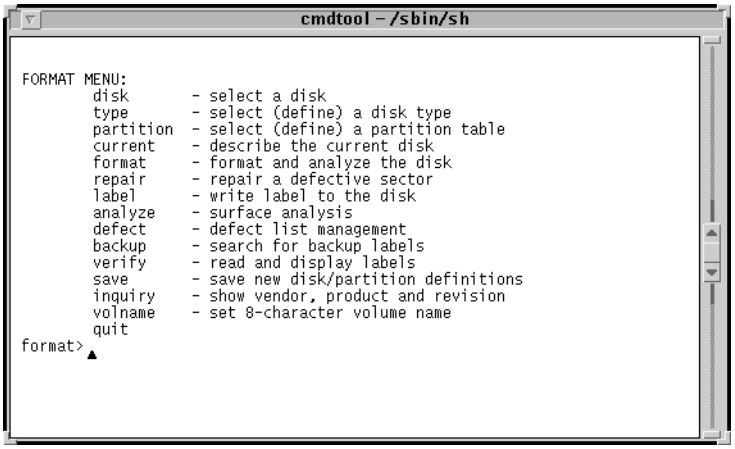


Figure 3-2. Format Menu

7. At the “format” prompt, enter:

   `partition`

   The system displays the Partition menu.

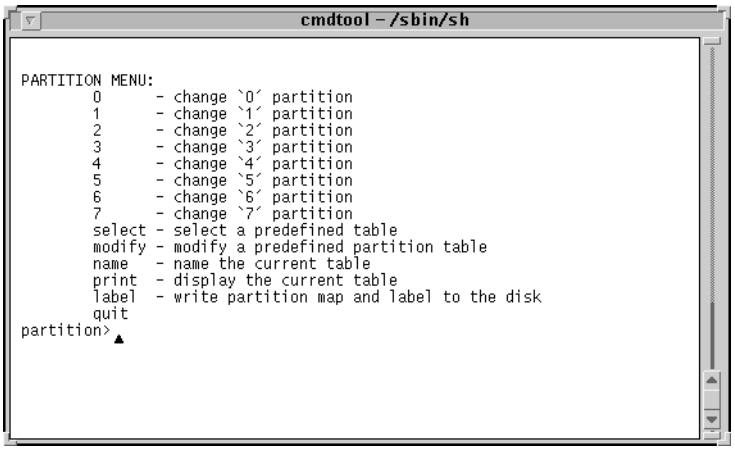


Figure 3-3. Partition Menu

Defining Partitions 1 and 3

Perform the following steps for Partition 1. Accept the default settings in brackets [default] by pressing the Return key when indicated. Do not make changes to Partition 2.

1. At the “partition” prompt, enter:

   ```
   1
   ```

2. Press `Return` to accept the defaults for the following prompts:

   ```
   Enter partition id tag [unassigned]:
   Enter partition permission flags [wm]:
   Enter new starting cyl [0]:
   Enter partition size [0b, 0c, 0.00mb]:
   ```

   If you are using a default label and did not re-label the drive, enter **0** at the partition size prompt.

Repeat step 1 and step 2 for Partition 3.

Partitions 1 and 3 are complete.

3. Proceed to “Creating a Master Device on Partition 0”.

Creating a Master Device on Partition 0

Complete the following steps to create a master device for Sybase on Partition 0. Accept the default settings in brackets [default] by pressing the Return key when indicated.

1. At the “partition” prompt, enter:

   ```
   0
   ```

2. Press `Return` to accept the defaults for the following prompts:

   ```
   Enter partition id tag [unassigned]:
   Enter partition permission flags [wm]:
   ```

   At the “Enter new starting cy1[1]:” prompt, enter:

   ```
   1
   ```

Do not accept the default value of zero (0) for the partition size, otherwise the database will become corrupt after installation and reboot.

3. At the “Enter partition size” prompt, enter:

   ```
   40mb
   ```

4. At the “partition” prompt, enter **print** to view the Partition table.

   Partition 0 is complete.

   Table 3-2 on page 3-5 shows an example of a Partition table.

Table 3-2. Partition Table

Part	Tag	Flag	Cylinders	Size	Blocks
0	unassigned	wm	1 - 54	40.08MB	(54/0/0)
1	unassigned	wm	0	0	(0/0/0)
2	backup	wm	0 - 2732	1.98GB	(2733/0/0)
3	unassigned	wm	0	0	(0/0/0)
4	unassigned	wm	55-88	25	(34/0/0)
5	unassigned	wm	89 - 493	300.23MB	(405/0/0)
6	unassigned	wm	494 - 898	300.23MB	(405/0/0)
7	unassigned	wm	899-2732	1.33GB	(1834/0/0)

5. Proceed to “Creating a System Procs Device on Partition 4”.

Creating a System Procs Device on Partition 4

Complete the following steps to create a System Procs device for Sybase on Partition 4. Accept the default settings in brackets [default] by pressing the Return key when indicated.

1. At the “partition” prompt, enter:

   ```
   4
   ```

2. Press Return to accept the defaults for the following prompts:

   ```
   Enter partition id tag [unassigned]:
   Enter partition permission flags [wm]:
   ```

3. At the “Enter new starting cy1[1]:” prompt, enter:

   ```
   <a number equal to the value of the ending cylinder from
   partition 0 plus 1>
   ```

4. At the “Enter partition size” prompt, enter:

   ```
   25mb
   ```

5. At the “partition” prompt, enter print to view the Partition Table.

   Partition 4 is complete.

6. Proceed to “Creating a CascadeView Device on Partition 5”.

Creating a CascadeView Device on Partition 5

Complete the following steps to create a CascadeView device for Sybase on Partition 5. Accept the default settings in brackets [default] by pressing the Return key when indicated.

1. At the “partition” prompt, enter:

   ```
   5
   ```

2. Press Return to accept the defaults for the following prompts:

   ```
   Enter partition id tag [unassigned]:
   Enter partition permission flags [wm]:
   ```

3. At the “Enter new starting cy1[1]:” prompt, enter:

   ```
   <a number equal to the value of the ending cylinder from
   partition 4 plus 1>
   ```

4. At the “Enter partition size” prompt, enter:

   ```
   300mb
   ```

5. At the “partition” prompt, enter **print** to view the Partition Table.

   Partition 5 is complete.

6. Proceed to “Creating a Log Device on Partition 6”.

Creating a Log Device on Partition 6

Complete the following steps to create a log device for Sybase on Partition 6. Accept the default settings in brackets [default] by pressing the Return key when indicated.

1. At the “partition” prompt, enter:

   ```
   6
   ```

2. Press Return to accept the defaults for the following prompts:

   ```
   Enter partition id tag [unassigned]:
   Enter partition permission flags [wm]:
   ```

3. At the “Enter new starting cy1[1]:” prompt, enter:

   ```
   <a number equal to the value of the ending cylinder from
   partition 5 plus 1>
   ```

4. At the “Enter partition size” prompt, enter:

   ```
   300mb
   ```

   Partition 6 is complete.

5. Proceed to “Calculating the Remaining Unallocated Drive Space”.

Calculating the Remaining Unallocated Drive Space

You must calculate the remaining space on the drive to partition Partition 7. To do this:

1. At the “partition” prompt, enter **print** to view the Partition table.
2. Locate the “Total disks available” line in the Partition table. See Figure 3-4 on page 3-8 for an example.

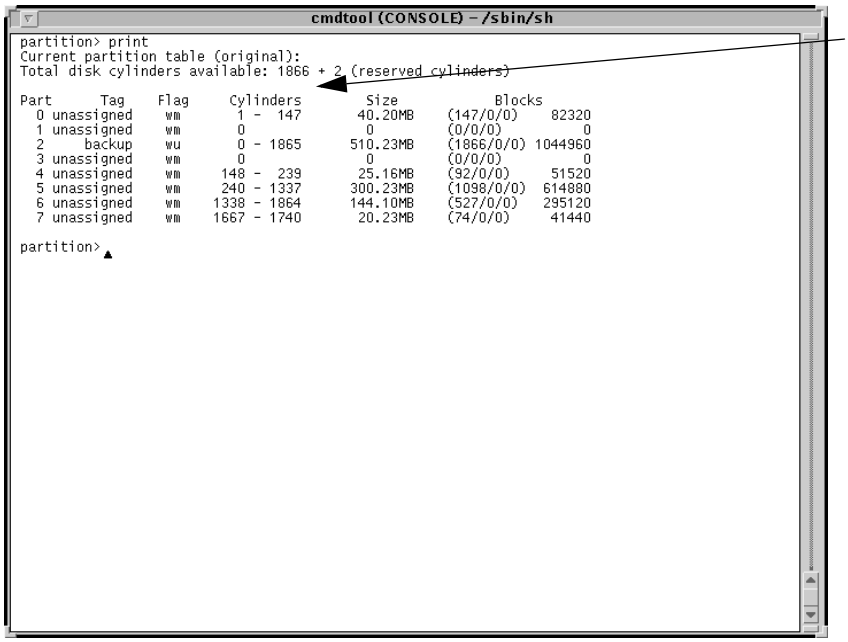


Figure 3-4. Unallocated Space Window

3. Subtract the Partition 6 ending cylinder number from the total disk cylinders available number.
4. Make a note of this number.
5. Proceed to “Defining Partition 7”.

Defining Partition 7

Perform the following steps for Partition 7. Accept the default settings in brackets [default] by pressing the Return key when indicated.

1. At the “partition” prompt, enter:

   ```
   7
   ```

2. Press Return to accept the defaults for the following prompts:

   ```
   Enter partition id tag [unassigned]:
   Enter partition permission flags [wm]:
   ```

3. At the “Enter new starting cy1[1]:” prompt, enter:

   ```
   <a number equal to the value of the ending cylinder from
   partition 6 plus 1>
   ```

4. At the “Enter partition size” prompt, enter:

   ```
   <number from step 4 on page 3-8>
   ```

5. At the “partition” prompt, enter:

   ```
   quit
   ```

6. At the “format” prompt, enter:

   `label`

7. At the “Ready to label disk” prompt, enter:

   `y`

8. At the “format” prompt, enter:

   ```
   quit
   ```

The partitioning of the second disk is complete. The next section describes how to load the Cascade-supplied Sybase media, and extract the scripts from the media.

Loading the Cascade-supplied Sybase Media

Complete the following steps to load the Cascade-supplied Sybase media and extract the scripts from the media:

1. Verify you are logged in as root user. You should see a # prompt in the command tool window.

   If you are not logged in as root, enter the following command in the command tool window:

   ```
   su - root
   ```

2. When prompted, enter your root password.

If you are logged in to the system via a remote connection (rlogin/rsh/telnet), set your DISPLAY variable to the appropriate value.
To do this, enter the command:

DISPLAY=[*enter local hostname*]:0.0
export DISPLAY
(This example uses the Korn shell syntax.)

In addition, in a new command tool window on the local system, run **"xhost +"** as the user who controls the system console. Executing this command enables you to display the installation log on the local system.

3. Insert the Cascade-supplied Sybase media into the media drive and close the latch.
4. In the command tool window, at the system prompt, enter:

   ```
   cd /opt
   ```

5. To extract the scripts from the media device, enter:

   ```
   tar -xvf [media device pathname] cv_scripts
   ```

   This process takes approximately five minutes.

6. Move to the *cv_scripts* directory by entering

   ```
   cd cv_scripts
   ```

7. Enter the following command to run the Cascade-supplied Sybase script:

   ```
   ./install_sybase
   ```

   The system displays the following message:

   ```
   Verifying super user privileges...
   Would you like to view (tail -f) the install log (default=y)?
   ```

8. Press Return to accept the default (yes). The Tail window opens.

Figure 3-5. Tail Window

The Sybase Installation Menu opens.

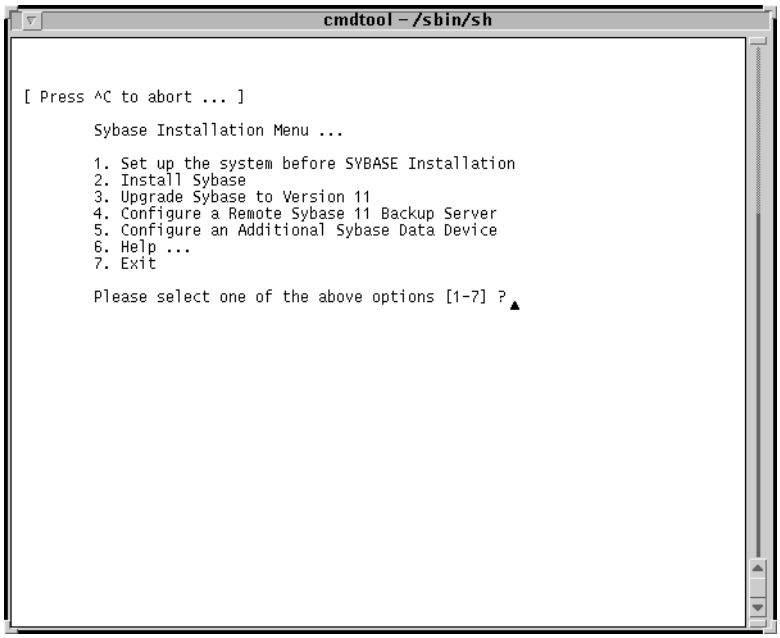


Figure 3-6. Sybase Installation Menu

The loading of the Cascade-supplied Sybase media is complete. The next section describes how to set up your system before installing the Sybase 11x software.

Setting Up the System

You must set up your system before installing Sybase 11x by running the Sybase installation script. The Sybase installation script:

- Creates the Sybase and NMS user accounts
- Creates additional user accounts
- Assigns TCP socket numbers to Sybase and Backup Server
- Sets the CascadeView device name
- Sets the Master, System Procs, and Log devices

To set up your system:

1. At the Sybase Installation Menu, enter:

   1

   The system displays the following message:

   ```
   Complete all prerequisite tasks before continuing. See
   Cascade's installation documentation for more information.

   Do you wish to continue? <y|n> [default=y]:
   ```

2. Press Return to continue.

   The system displays the following message:

   ```
   Setting up your system for the Sybase Install
   -----------------------------------------------

   Creating the dba group for database system administrator.
   Successfully added group 'dba' with gid 300

   Creating a user account for sybase
   ------------------------------------

   Enter User's home directory [default : /opt/sybase] ?
   ```

3. Press Return to accept the default of */opt/sybase*.

   The system displays the following message:

   ```
   Adding user sybase. Please wait...

   Successfully added user sybase...

   Configuring the user account with environment files.
   ------------------------------------------------------

   Enter the Database Server Name (default=CASCADE) ?
   ```

4. Press Return to accept the default of CASCBSTAT.

5. At the “Enter the name of the error log” prompt, press Return to accept the default of *CASCBSTAT_err.log*.
6. At the “Enter the Database SA Password” prompt, enter:

   ```
   <your Database SA password>
   ```

   When prompted, reenter the password.

Choose a password that you can remember (for example, **superbase**).

The system displays the following message:

```
Creating /etc/rc2.d/S97sybase..Done.

Creating /etc/rc0.d/k01sybase..Done.

Creating /etc/rc2.d/S98sybase..Done.
```

The script creates three files (listed above) that activate and deactivate the Sybase 11x Server and the Backup Server. The script uses these files later in the installation to shut down and start up the Sybase Server. The system displays the following message:

```
You must add at least one more user account.

Enter name of the new user [default : nms] ?
```

7. Press Return to accept the default of nms.
8. At the “Enter group to which new user belongs” prompt, press Return to accept the default of staff.

   The system displays the following message:

   ```
   Creating a user account for nms
   ---------------------------------------

   Enter User’s home directory [default : /opt/nms] ?
   ```

9. Press Return to accept the default of */opt/nms*.

   The system displays the following message:

   ```
   Adding user nms. Please Wait...

   Successfully added user nms...

   Configuring the user account with environment files.
   ---------------------------------------------------
   ```

```
Setting Shared Memory Allocations
---------------------------------
```

The Cascade script increases Sybase's shared memory. The script accomplishes this by appending the line
set shmsys:shminfo_shmmax=131072000 to the /etc/system file.

The system displays the following message:

```
Making a backup copy of '/etc/system' in '/etc/system.cv'

Setting TCP Socket device for Sybase
------------------------------------

The Socket Number for SYBASE is 1025
The Socket Number for SYBASE BACKUP is 1026
```

The Cascade script assigns TCP socket numbers to Sybase and the Backup Server. The 1025 value is assigned to Sybase and the 1026 value is assigned to Backup Server. If these numbers are already in use, the script assigns the next available numbers.

The system displays the following message:

```
Do you wish to continue? <y|n> [default=y]:
```

10. Press Return to continue.

The system displays the following message:

```
Creating Additional User Accounts
---------------------------------

1. Create User Account.
2. Proceed to the Next Step.
```

- To create additional user accounts, enter **1**.

  The script prompts you for information similar to what you provided for the NMS user account. Refer to step 7 on page 3-13.

- To proceed to the next step, enter **2**.

  The Device Installation menu opens.

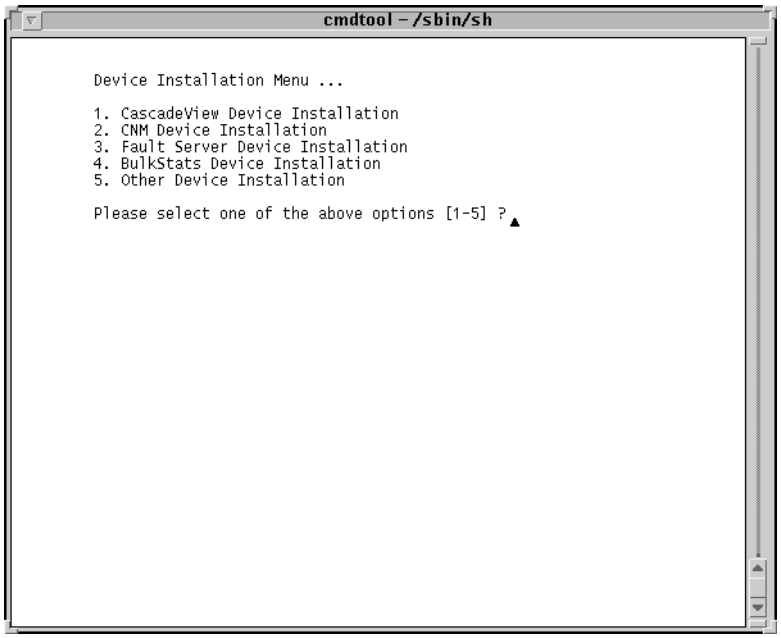


Figure 3-7. Device Installation Menu

11. Enter **1** to set the CascadeView Device name.

The system displays the following message:

```
The Cascadeview Device Installation has been selected.
```

The CascadeView device name is set.

If you use Sybase in conjunction with other Cascade products (CNM Proxy Agent, Bulk Statistics), you must configure additional devices for these products.

The Sybase11x Master Device menu opens.

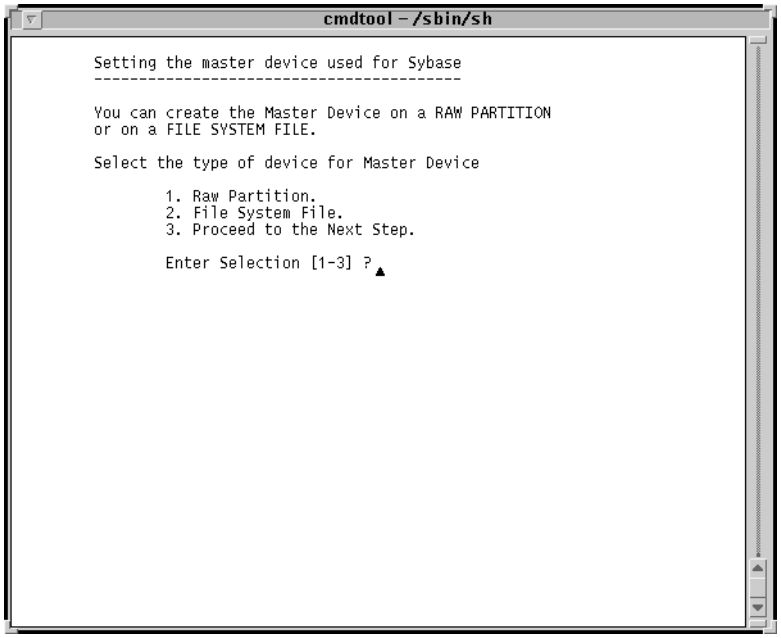


Figure 3-8. Sybase 11x Master Device Menu

12. Select a Master device:

- Enter **1** to select Raw Partitions. Proceed to "Using Raw Partitions for the Master Device."
- Enter **2** to select File System Files. Proceed to "Using File System Files for the Master Device" on page 3-18.

Using Raw Partitions for the Master Device

The following message appears if you selected Raw Partitions:

```
WARNING: IF YOU INSTALL THE SQL SERVER ON A RAW PARTITION,
ANY EXISTING FILES ON THAT PARTITION WOULD BE OVERWRITTEN.

Do you wish to continue? [default=y]:
```

1. Press Return to continue.

The Cascade script does not provide defaults for the following prompts because customer configurations vary.

The system displays the following message:

```
Setting up Raw Partition Devices
---------------------------------
Enter the Master Device Path Name (e.g. /dev/rdsk/c0t1d0s0):
```

2. Enter:

   ```
   /dev/rdsk/c0t1d0s0
   ```

   The system displays the following message:

   ```
   Setting device permissions. Please Wait..

   Device /dev/rdsk/c0t1d0s0 has been set.

   Enter the Procs Device Path Name (e.g. /dev/rdsk/c0t1d0s4):
   ```

3. Enter:

   `/dev/rdsk/c0t1d0s4`

   The system displays the following message:

   ```
   Setting device permissions. Please Wait..

   Device /dev/rdsk/c0t1d0s4 has been set

   Enter the Cascade Device Path Name (e.g.
   /dev/rdsk/c0t1d0s5):
   ```

4. Enter:

   `/dev/rdsk/c0t1d0s5`

   The system displays the following message:

   ```
   Setting device permissions. Please Wait..

   Device /dev/rdsk/c0t1d0s5 has been set.

   Enter the Log Device Path Name (e.g. /dev/rdsk/c0t1d0s6):
   ```

5. Enter:

   `/dev/rdsk/c0t1d0s6`

   The system displays the following message:

   ```
   Setting device permissions. Please wait..

   Device /dev/rdsk/c0t1d0s6 has been set. The maximum value
   for your Master Device has been calculated to maximize the
   size of your raw partition. By accepting the default you will
   be utilizing the whole raw device. A minimum value has been
   established at 40 Mbytes. You will not be allowed to go below
   that threshold.

   NOTE: It is recommended that you accept the maximum value.
   Otherwise, the space left over will be wasted.

   Enter size of your Master Device in Megabytes:
   ```

6. Press Return to accept the default of 40.

   The system displays the following message:

   ```
   Press Enter to return...
   ```

7. Press Return to continue.

   The system displays the following message:

   ```
   ****************************************************
   If you have completed the initial SYBASE setup
   successfully, please REBOOT the workstation now.
   ```

8. At the # prompt, to reboot the system, enter:

   ```
   init 6
   ```

9. Proceed to "Running the Sybase 11x Installation Script" on page 3-21.

Using File System Files for the Master Device

If you select File system files, the system displays the following warning message:

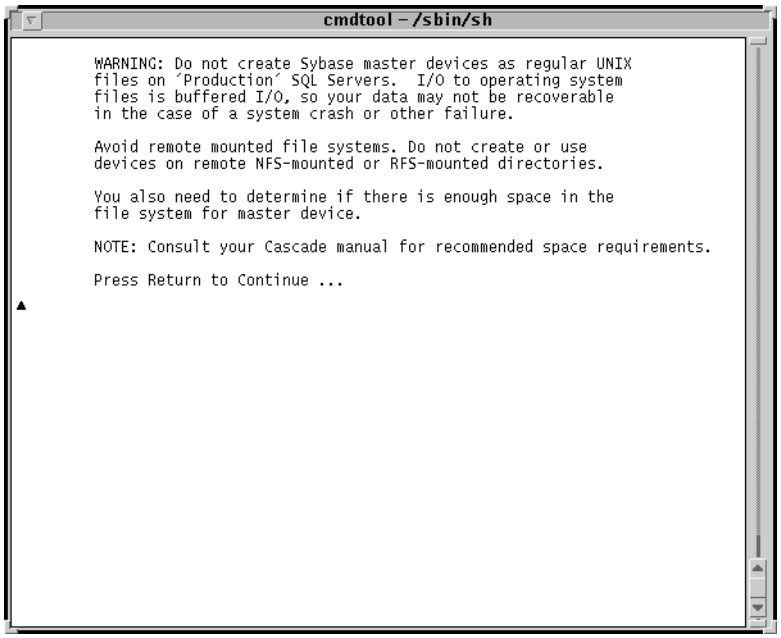


Figure 3-9. Warning Window

1. Press Return to continue.

   The Disk Space Report screen opens.

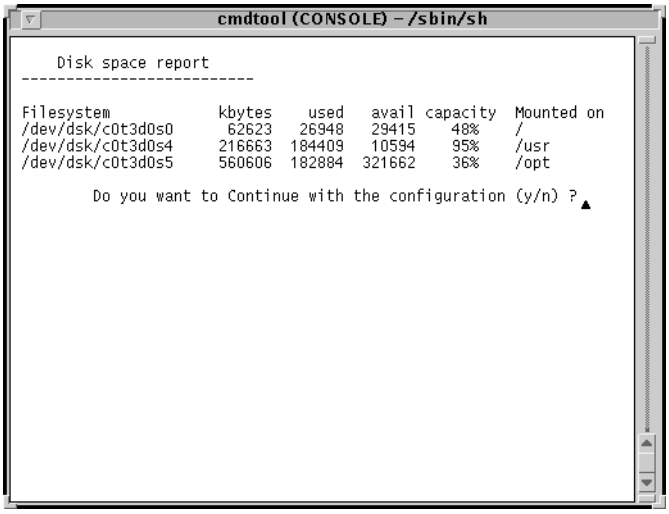


Figure 3-10. Disk Space Report Screen

2. Enter **y** to continue.
3. At the “Enter name for database device directory” prompt, press Return to accept the default of */opt/databases*.

   The system displays the following message:

   ```
   The minimum value for your Master Device has been
   established at 40 MBytes. By accepting the default you will
   be assigning the minimum space allowed for an initial
   CascadeView Installation.

   NOTE: Consult your Cascade manual for recommended sizes.
   Enter the size of the Master Device in Megabytes
   [default=40]:

   Enter the size of your Master Device in Megabytes:
   ```

4. Press Return to accept the default of 40.
5. At the “Enter the size of your System Procs Device in Megabytes” prompt, press Return to accept the default of 25.
6. At the “Enter the size of your Data Device in Megabytes” prompt, press Return to accept the default of 50.

7. At the “Enter the size of your Log Device in Megabytes” prompt, press Return to accept the default of 100.

Cascade supports the default device sizes in step 6 and step 7 in CascadeView installations only. Other Cascade Server products require larger data and log device sizes.

The system displays the following message:

```
Creating Master Device file...

Making directory for the master device...

Press Enter to return...
```

8. Press Return to continue.

   The system displays the following message:

```
**************************************************
If you have completed the initial SYBASE setup
successfully, please REBOOT the workstation now.
```

9. At the # prompt, to reboot the system, enter:

```
init 6
```

   The Sybase prerequisite tasks are complete.

10. Proceed to “Running the Sybase 11x Installation Script” on page 3-21.

Running the Sybase 11x Installation Script

To run the Sybase 11x installation script:

1. At the console login:
   - If you installed Solaris 2.4 and Motif 1.2.5, enter **root**. When prompted, enter the root password.

     Start OpenWindows by entering **`/usr/openwin/bin/openwin`**.
   - If you installed Solaris 2.5.1 and CDE, enter **`root`.** When prompted, enter your root password.

If you are logged in to the system via a remote connection (rlogin/rsh/telnet), set your DISPLAY variable to the appropriate value. To do this, in a command tool window enter

```
DISPLAY=[enter local hostname]:0.0
export DISPLAY
```

(This example uses the Korn shell syntax.)

In addition, in a new command tool window on the local system, run **"xhost +"** as the user who controls the system console. Executing this command enables you to display the installation log on the local system.

2. In the command tool window, change to the scripts directory by entering:

   ```
   cd /opt/cv_scripts
   ```

3. Enter the following command to run the Cascade script:

   ```
   ./install_sybase
   ```

   The system displays the following message:

   ```
   Verifying super user privileges...

   Would you like to view (tail -f) the install log (default=y)?
   ```

   The Tail window allows users to view a log of the installation process. To view an example of the Tail window, refer to Figure 3-5 on page 3-11.

4. Press Return to accept the default (yes).

The Sybase Installation menu opens.

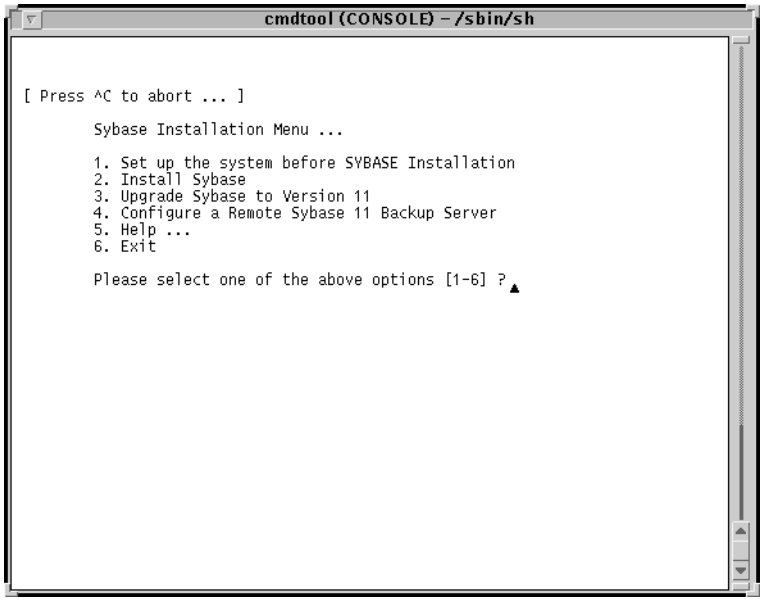


Figure 3-11. Sybase Installation Menu

5. At the Sybase Installation Menu, enter:

```
2
```

The system displays the following message:

```
The following items are required to be completed before
performing this step.

1. Space requirements must be clarified.
2. Step 1 from the Sybase menu must be completed.

Do you wish to continue? <y|n> [default=y]:
```

6. Press Return to continue.

The system displays the parameters you entered and prompts you to make any necessary changes. The Figure 3-12 shows an example of raw partition parameters.

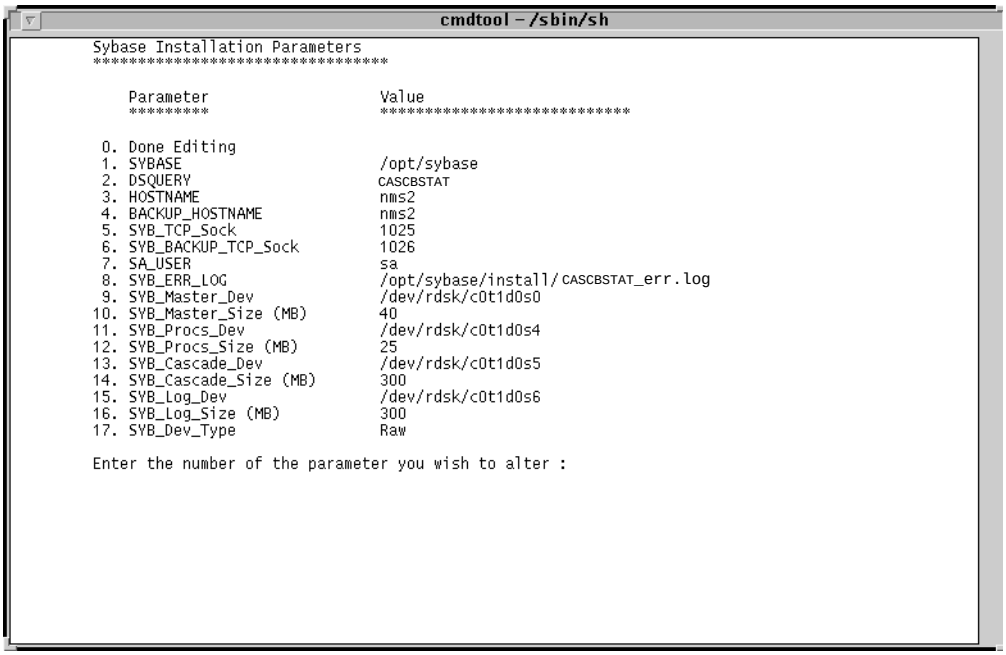


Figure 3-12. Raw Partition Parameters Window

7. To change any device parameters, enter the parameter number and make the appropriate changes.

- If you change parameters 11-17, the Sybase Master Device menu reappears. Refer to step 12 on page 3-16.
- If you change parameter 1, the script prompts you to change parameter 8.

8. Once you have finished making your changes, enter **0** to continue.

The system displays the following message:

```
Install the media in your local device now.
**********************************************

Enter the full path of the media device:
```

9. Enter:

<media device pathname>

The system displays the following message:

```
The device was found and is ready for extraction.
Press Return to Continue...
```

10. Press Return.

The system displays the following messages:

```
Extracting Sybase Media from the device...Done.

Running ‘sybinit’ and creating the sybase server...Done
Successfully.
```

Running the sybinit utility takes approximately 15 minutes.

```
Running ‘alter’ commands to expand the master device and the
tempdb file. This may take a few moments.
Please Wait...Done Successfully.

Increasing the Memory allocations to 20480 for improved
performance...
```

The Cascade script increases memory allocation to allow basic Sybase commands to execute. The script does so because the system has insufficient byte memory for Sybase commands. For more information, refer to the “Sybase SQL Server Installation and Configuration Guide.”

The system displays the following message:

```
Increasing the Number of Remote Users
-------------------------------------

By Default, the Sybase installation sets the number of user
connections to 25. If you need to increase the total
connections above 25 then enter the number of connections
you require.

Enter the number of user connections [default=25] ?
```

11. Do one of the following:

- Press Return to accept the default of 25.
- Enter <***number of remote users***>.

The system displays the following message:

```
Press Enter to Continue...
```

12. Press Return.

```
Restarting Server with increased options
```

The script shuts down and restarts the Sybase Server, enabling the new configuration parameters to take effect.

If you encounter errors during the Sybase Server startup, call the Cascade Technical Response Center at **1-800-692-2600** in the United States and Canada. Call **1-508-952-1299** outside the United States and Canada.

Configuring a Local Backup Server

The script automatically configures a local Backup Server and displays the message:

```
Configuring Local Backup Server
*******************************

Running 'sybinit' and creating the sybase server...Backup
Server Install Successful....
```

The Sybase Installation Menu appears.

13. At the Sybase Installation Menu, enter **7** to exit.

The system displays the following message:

```
Cleaning up temporary files......Done.

Exiting Installation script.
```

14. Close the Tail window by placing the mouse pointer in the window and enter:

```
<Ctrl>C
```

The Sybase installation is complete.

4

Running ATM Bulk Statistics

Before You Begin

Before you run ATM Bulk Statistics, make sure you have:

- ☑ Properly installed the ATM Bulk Statistics software. Refer to Chapter 2 for instructions.
- ☑ If you are using Sybase 11x with ATM Bulk Statistics, enter the following command to verify that the Sybase 11x server is running:
  `opt/sybase/install/showserver`
- ☑ Configured both the CBX 500s and IOMs from which you want to collect ATM Bulk Statistics. Refer to Chapter 2 for instructions.

Using the Console Commands

This section describes how to start, stop, and obtain the current status of the ATM Bulk Statistics Collection Station (the Collector).

Starting ATM Bulk Statistics

To start ATM Bulk Statistics, you must have group access.

To start ATM Bulk Statistics, at the Collector do the following:

1. Go to the *<install_dir>/BulkStatsATM/etc* directory.
2. Enter the following command:

   `BulkStatATM startup`

3. If ATM Bulk Statistics is not currently running, the following prompt is displayed:

   ```
   The system has been verified to be not running.
   Are you sure you want to begin processing? (Y/N)
   ```

4. Enter **Y**. One of the following messages is displayed:

   ```
   BULK STATS ATM Processing has been ENABLED.
   ```

   ```
   BULK STATS ATM Processing is already running.
   ```

Stopping ATM Bulk Statistics

To stop ATM Bulk Statistics, you must be ‘root’ or the person that started the application.

To stop ATM Bulk Statistics, at the Collector do the following:

1. Go to the *<install_dir>/BulkStatsATM/etc* directory.
2. Enter the following command:

   `BulkStatATM shutdown`

   One of the following messages is displayed:

   ```
   BULK STATS ATM Processing has been DISABLED.
   ```

   ```
   BULK STATS ATM Processing is not running.
   ```

Obtaining the Status of the ATM Bulk Statistics Collection Station

To obtain the status of the Collector, you must have group access.

To obtain Collector status, at the Collector do the following:

1. Go to the *<install_dir>/BulkStatsATM/etc* directory.
2. Enter the following command:

   `BulkStatATM status`

   One of the following messages is displayed:

   ```
   The Bulk Statistics Collector for ATM is currently running.
   ```

   ```
   The Bulk Statistics Collector for ATM is currently disabled.
   ```

The ATM Debug Translator (ATM_bsdump)

ATM_bsdump enables you to print to the screen, or re-direct to a file, the contents of raw statistics files. This is useful for checking the values of fields without having to run ATM Bulk Statistics. Each field name is displayed followed by the value of each record in the raw statistics file.

To run ATM_bsdump, at the Collector do the following:

1. Go to the *<install_dir>/BulkStatsATM/bin* directory.
2. Enter the following command:

   `ATM_bsdump [-f -b] <filename>`

   where:**`-f`** displays additional information about the usage data file.
   `-b` displays additional information about each usage data buffer.

Gathering ATM Statistics

Each data set uploaded to the Collector includes the following information:

Collection time — The measurement period end-time, repeated in Universal Coordinate Time (UCT).

Measurement period (per I/O module) — The length of the actual measurement period.

Peak Measurement period (per I/O module) — Reported as the number of minutes over which 5-minute peak measurements were made.

ATM PVC Statistics

When reviewing ATM Bulk Statistics PVC data, it is important to note the following:

- When a PVC state transitions from disabled to enabled, measurement of the PVC begins immediately. However, this will probably not be on a 5-minute snapshot period boundary. For example, if a circuit is enabled at 2:33, statistics measurement of that PVC will be restarted at 2:33. However, the CBX 500 will report this as a complete 5-minute period. Consequently, utilization figures for a given PVC may be skewed for the period in which the PVC came up.
- When a PVC goes down before the end of a measurement period, the CBX 500 reports to the Collector the counts from the beginning of the measurement period to the previously completed 5-minute snapshot period before the PVC went down. Therefore, at most five minutes of data will be lost for the PVC.

Table 4-1 describes the ATM PVC statistics. For detailed information on ATM Traffic Descriptors, refer to the *Network Configuration Guide for CBX 500*.

Table 4-1. ATM PVC Statistics

Statistics	Bytes	Description
InPassedUsrOamCLP0Cells	5	The total number of received User and Operations, Administration, and Maintenance (OAM) CLP=0 cells that passed Usage Parameter Control (UPC) screening during the measurement period.
InPassedUsrOamCLP0CellsPeak	4	Five-minute peak value for the above counter.
InPassedUsrOamCLP1Cells	5	The total number of received User and OAM CLP=1 cells that passed UPC screening during the measurement period.
InPassedUsrOamCLP1CellsPeak	4	Five-minute peak value for the above counter.
InDroppedUsrOamCLP0Cells	5	The total number of User and OAM CLP=0 cells that were received and dropped by UPC during the measurement period.
InDroppedUsrOamCLP0CellsPeak	4	Five-minute peak value for the above counter.

Table 4-1. ATM PVC Statistics (Continued)

Statistics	Bytes	Description
InDroppedUsrOamCLP1Cells	5	The total number of User and OAM CLP=1 cells that were received and dropped by UPC during the measurement period.
InDroppedUsrOamCLP1CellsPeak	4	Five-minute peak value for the above counter.
InTaggedUsrOamCells	5	The total number of received and tagged User and OAM cells during the measurement period.
InTaggedUsrOamCellsPeak	4	Five-minute peak value for the above counter.
OutUsrCLP0Cells	5	The total number of User CLP=0 cells that were transmitted during the measurement period.
OutUsrCLP0CellsPeak	4	Five-minute peak value for the above counter.
OutUsrCLP1Cells	5	The total number of User CLP=1 cells that were transmitted during the measurement period.
OutUsrCLP1CellsPeak	4	Five-minute peak value for the above counter.
OutOamCLP0Cells	5	The total number of OAM CLP=0 cells that were transmitted during the measurement period.
OutOamCLP0CellsPeak	4	Five-minute peak value for the above counter.
OutOamCLP1Cells	5	The total number of OAM CLP=1 cells that were transmitted during the measurement period.
OutOamCLP1CellsPeak	4	Five-minute peak value for the above counter.
OutDropFcUsrOamCLP0Cells	5	The total number of CLP0=0 cells (user and OAM) received from the switching fabric and discarded by the ATM Flow-Control Processor (if the circuit passes through the ATM Flow-Control Processor).

Table 4-1. ATM PVC Statistics (Continued)

Statistics	Bytes	Description
OutDropFcUsrOamCLP1CellsPeak	4	Five-minute peak value for the above counter.
OutDropFcUsrOamCLP1Cells	5	The total number of CLP0 =1 cells (user and OAM) received from the switching fabric and discarded by the ATM Flow-Control Processor (if the circuit passes through the ATM Flow-Control Processor).
OutDropFcUsrOamCLP1CellsPeak	4	Five-minute peak value for the above counter.

ATM Logical Port Statistics

Table 4-2 describes the ATM logical port statistics. For detailed information on ATM Traffic Descriptors, refer to the *Network Configuration Guide for CBX 500*.

Table 4-2. ATM Logical Port Statistics

Statistics	Bytes	Description
InUsrOamCLP01Cells	5	The total number of received User and OAM CLP=0+1 cells during the measurement period.
InUsrOamCLP01CellsPeak	4	Five-minute peak value for the above counter.
InErrorUsrOamCLP01Cells	5	For OC3/DS3/T1, this is a count of the number of cells received during the measurement period with incorrectable HEC errors. For OC12, this is a count of the number of cells received with correctable HEC errors.
InErrorUsrOamCLP01CellsPeak	4	Five-minute peak value for the above counter.
InFcRMCells	5	The total number of RM cells received by the ATM Flow-Control Processor for this port. This count is only valid for logical ports that have the ATM Flow Control Processor enabled.
InFcRMCellsPeak	4	Five-minute peak value for the above counter.
OutUsrOamCLP01Cells	5	The total number of transmitted User and OAM CLP=0+1 cells.
OutUsrOamCLP01CellsPeak	4	Five-minute peak value for the above counter.
OutDroppedUsrOamCLP01Cells	5	The total number of dropped User and OAM CLP=0+1 cells.
OutDroppedUsrOamCLP01CellsPeak	4	Five-minute peak value for the above counter.
Ingress Utilization	5	Logical port utilization on inbound side (from the CPE or network).

Table 4-2. ATM Logical Port Statistics (Continued)

Statistics	Bytes	Description
Ingress Peak Utilization	4	Logical port utilization during the reported peak period.
Egress Utilization	5	Logical port utilization of the outbound side during the reported period (to the CPE or network).
Egress Peak Utilization	4	Logical port utilization on outbound side during the reported peak period.

ATM Logical Port SVC Statistics

Table 4-3 describes the ATM logical port SVC statistics. For detailed information on ATM Traffic Descriptors, refer to the *Network Configuration Guide for CBX 500.*

Table 4-3. ATM Logical Port SVC Statistics

Statistics	Bytes	Description
PtPtOrigActiveMin	4	Point-to-Point Active - Min (Originating). The low-water mark of simultaneous active Point-to-Point SVCs originating on this port.
PtPtTermActiveMin	4	Point-to-Point Active - Min (Terminating). The low-water mark of simultaneous active Point-to-Point SVCs terminating on this port.
PtPtOrigActiveMax	4	Point-to-Point Active - Max (Originating). The high-water mark of simultaneous active Point-to-Point SVCs originating on this port.
PtPtTermActiveMax	4	Point-to-Point Active - Max (Terminating). The high-water mark of simultaneous active Point-to-Point SVCs terminating on this port.
PtPtOrigAttempts	4	Point-to-Point Attempts (Originating). The number of Point-to-Point SVC connection attempts originating on this port (as measured by the number of SETUP PDUs received from the CPE).
PtPtTermAttempts	4	Point-to-Point Attempts (Terminating). The number of Point-to-Point SVC connection attempts terminating on this port (as measured by the number of SETUP PDUs received from the network).

Table 4-3. ATM Logical Port SVC Statistics (Continued)

Statistics	Bytes	Description
PtPtNetworkRejects	4	Point-to-Point Rejects - Network. The number of Point-to-Point SVC connection attempts, originating on this port, that were rejected for any reason other than remote user reject.
PtPtOrigUserRejects	4	Point-to-Point Rejects - User (Originating). The number of Point-to-Point SVC connection attempts, originating on this port, that were rejected by the remote user.
PtPtTermUserRejects	4	Point-to-Point Rejects - User (Terminating). The number of Point-to-Point SVC connection attempts, terminating on this port, that were rejected by the local user.
PtPtOrigFailures	4	Point-to-Point Failures (Originating). The number of Point-to-Point SVC connections, originating on this port, that failed after the connection went active (i.e., for any reason other than the user explicitly dropping the connection).
PtPtTermFailures	4	Point-to-Point Failures (Terminating). The number of Point-to-Point SVC connections, terminating on this port, that failed after the connection went active (i.e., for any reason other than the remote user explicitly dropping the connection).
PtMPtOrigActiveConnMin	4	Point-to-Multipoint Active - Min (Originating). The low-water mark of simultaneous active Point-to-Multipoint SVC legs originating on this port.
PtMPtTermActiveConnMin	4	Point-to-Multipoint Active - Min (Terminating). The low-water mark of simultaneous active Point-to-Multipoint SVC legs terminating on this port.

Table 4-3. ATM Logical Port SVC Statistics (Continued)

Statistics	Bytes	Description
PtMPtOrigActiveConnMax	4	Point-to-Multipoint Active - Max (Originating). The high-water mark of simultaneous active Point-to-Multipoint SVC legs originating on this port.
PtMPtTermActiveConnMax	4	Point-to-Multipoint Active - Max (Terminating). The high-water mark of simultaneous active Point-to-Multipoint SVC legs terminating on this port.
PtMPtOrigActivePartiesMin	4	Point-to-Multipoint Active Parties - Min (Originating). The low-water mark of simultaneous active Point-to-Multipoint SVC parties originating on this port.
PtMPtTermActivePartiesMin	4	Point-to-Multipoint Active Parties - Min (Terminating). The low-water mark of simultaneous active Point-to-Multipoint SVC parties terminating on this port.
PtMPtOrigActivePartiesMax	4	Point-to-Multipoint Active Parties - Max (Originating). The high-water mark of simultaneous active Point-to-Multipoint SVC parties originating on this port.
PtMPtTermActivePartiesMax	4	Point-to-Multipoint Active Parties - Max (Terminating). The high-water mark of simultaneous active Point-to-Multipoint SVC parties terminating on this port.
PtMPtOrigConnAttempts	4	Point-to-Multipoint Attempts (Originating). The number of Point-to-Multipoint SVC connection SETUP attempts originating on this port.

Table 4-3. ATM Logical Port SVC Statistics (Continued)

Statistics	Bytes	Description
PtMPtOrigPartyAttempts	4	Point-to-Multipoint Party Attempts (Originating). The number of Point-to-Multipoint SVC connection ADD PARTY attempts originating on this port.
PtMPtTermConnAttempts	4	Point-to-Multipoint Attempts (Terminating). The number of Point-to-Multipoint SVC connection SETUP attempts received from the network and terminating on this port.
PtMPtTermPartyAttempts	4	Point-to-Multipoint Party Attempts (Terminating). The number of Point-to-Multipoint SVC connection ADD PARTY attempts received from the network and terminating on this port.
PtMPtOrigNetworkConnRejects	4	Point-to-Multipoint Rejects - Network. The number of Point-to-Multipoint SVC connection SETUP attempts, originating on this port, that were rejected for any reason other than remote user reject.
PtMPtOrigNetworkPartyRejects	4	Point-to-Multipoint Party Rejects - Network. The number of Point-to-Multipoint SVC connection ADD PARTY attempts, originating on this port, that were rejected for any reason other than remote user reject.
PtMPtOrigRemUserConnRejects	4	Point-to-Multipoint Rejects - Remote User (Originating). The number of Point-to-Multipoint SVC connection SETUP attempts, originating on this port, that were rejected by the remote user.

Table 4-3. ATM Logical Port SVC Statistics (Continued)

Statistics	Bytes	Description
PtMPtOrigRemUserPartyRejects	4	Point-to-Multipoint Party Rejects - Remote User (Originating). The number of Point-to-Multipoint SVC connection ADD PARTY attempts, originating on this port, that were rejected by the remote user.
PtMPtTermUserConnRejects	4	Point-to-Multipoint Rejects - Local User (Terminating). The number of Point-to-Multipoint SVC connection SETUP attempts, terminating on this port, that were rejected by the local user.
PtMPtTermUserPartyRejects	4	Point-to-Multipoint Party Rejects -Local User (Terminating). The number of Point-to-Multipoint SVC connection ADD PARTY attempts, terminating on this port, that were rejected by the local user.
PtMPtOrigConnFailures	4	Point-to-Multipoint Failures (Originating). The number of Point-to-Multipoint SVC connections, originating on this port, that failed after the connection went active. This count includes only the legs resultant from initial SETUP requests.
PtMPtOrigPartyFailures	4	Point-to-Multipoint Party Failures (Originating). The number of parties dropped from originating Point-to-Multipoint SVC connections that failed after the connection went active.
PtMPtTermConnFailures	4	Point-to-Multipoint Failures (Terminating). The number of Point-to-Multipoint SVC connections, terminating on this port, that failed after the connection went active. This count includes only the legs resultant from initial SETUP requests.

Table 4-3. ATM Logical Port SVC Statistics (Continued)

Statistics	Bytes	Description
PtMPtTermPartyFailures	4	Point-to-Multipoint Party Failures (Terminating). The number of parties dropped from terminating Point-to-Multipoint SVC connections that failed after the connection went active.

5

Troubleshooting

This chapter provides general troubleshooting solutions for resolving problems with ATM Bulk Statistics. If you suspect hardware problems or problems with CascadeView, refer to the appropriate hardware and/or software manual for instructions.

- For CBX 500 software problems, refer to the “Resolving Problems” chapter in the *Network Configuration Guide for CBX 500.*
- For CBX 500 hardware problems, refer to the “Troubleshooting” chapter in the *CBX 500 Hardware Installation Guide*.

Contacting the Technical Response Center

You can contact the Cascade Technical Response Center by phone, Email, or FAX.

Calling by Phone — Cascade offers customer support 24 hours a day, 7 days a week. To contact the Cascade Technical Response Center by phone, call either of the following numbers:

- 1-800-DIAL-WAN (1-508-692-2600) (in the United States and Canada)
- 1-508-952-1299 (outside the U.S., Canada, and the United Kingdom)
- 0-800-96-2229 (in the United Kingdom)

Sending Email — To contact the Cascade Technical Response Center by Email, address your requests to:

cs@casc.com

Sending a FAX — To contact the Cascade Technical Response Center by FAX, call:

1-508-692-1218

Be sure to include the following information when requesting technical support:

- Your name and telephone number
- Name of contact person and telephone number (if different from above)
- Brief description of the problem
- List of identifiable symptoms
- Any information that you gathered as a result of reviewing the Technical Response Center Checklist

Common Problems (Raw Statistics)

Filename error when trying to read a file

Condition — Failed to read file.

Possible Cause — The file pathname is incorrect or the file does not exist.

Recommendation — Check to see if the file exists and that you have read permissions.

File Cyclic Redundancy Check (CRC) failure

Condition — CRC check failed on the file.

Possible Causes — The raw statistics file was not completely received from the CBX 500, or the file was corrupted during transmission from the CBX 500.

Recommendation — Wait for retransmission of the file during the next time period.

Cannot write to a file

Condition — Writing to a file failed.

Possible Cause — The file pathname is incorrect or the file does not exist.

Recommendation — Check to see if the file exists and that you have write permissions to the directory and the file. In addition, make sure the destination directory exists.

Unsuccessful bulk copy of a file (file is kept and retried later)

Condition — Failed to bulk copy a translated file into the database.

Possible Cause — The database and/or the database transaction log file may be full or not running.

Recommendation — Check to see if the database is up and running. If the database is up and running, check the database and its transaction log. If necessary, increase the size of the database and/or the transaction log.

Unsuccessful bulk copy of a file (file is moved to the /bcp directory and retried later)

Condition — Failed to bulk copy a translated file into the database.

Possible Cause — The database and/or the database transaction log file may be full or not running.

Recommendation — Check to see if the database is up and running. If the database is up and running, check the database and its transaction log. If necessary, increase the size of the database and/or the transaction log.

ATM Bulk Statistics application does not see the statistics files that were uploaded to the ATM Bulk Statistics Collection Station

Condition — The ATM Bulk Statistics files are not visible on the ATM Bulk Statistics Collection Station (the Collector).

Possible Causes — The specified Collector directory does not have world read access, or the Collector directory does not exist. In addition, there could be no route specified between the CBX 500 and the Collector.

Recommendations — Check to see if the Collector directory exists and that you have read permissions. If the failure still occurs, check to make sure that the tftp server is running. In addition, “ping” the CBX 500 to make sure it is on-line. If there is no route between the CBX 500 and the Collector, configure one. (Refer to Chapter 2, “Installation and Configuration,” for instructions.)

A

Translated Statistics Format

This appendix describes the translated formats for the ASCII comma-delimited files.

General Header Fields

The general header fields for each translated record contain the following information:

Switch IP Address — The CBX 500's IP address, recorded in dotted-decimal notation (e.g., 152.148.1.2).

The following fields report the measurement period start-time as recorded at the CBX 500. The time is reported in Universal Coordinated Time (UTC).

Year — The full year, including the century.

Month — The month number, 1 to 12.

Day — The day of the month, 1 to 31.

Hour — The hour of the day, 00 - 23.

Minute — 0 to 59.

Second — 0 to 59.

Measurement Period Start-time — The measurement period start-time reported as the number of seconds since January 1, 1970 00:00:00.00 UTC.

Measurement Period Length — The length of the measurement period in seconds. For example, a one-hour measurement period is reported as 3,600 seconds.

Peak Period Measurement Start-time — The time at which the CBX 500 began measuring peak periods. This field is required because the capability to measure peak and total statistics is controlled separately at the CBX 500. Consequently, the time when the CBX 500 began measuring peaks may be different from the time the CBX 500 began measuring the total statistics.

Peak Samples — The number of 5-minute peak sample periods that were measured during this reporting period.

Formatting of 40-bit Counters

The total counters for circuits, ports, and trunks are 40 bits (5 bytes) wide. These counters are reported in the translated file as base-10 decimal numbers with up to 12 digits of precision to the right of the decimal point.

ATM PVC Translated File Format

The output format for PVCs is defined as follows:

Switch IP Address,
Year,
Month,
Day,
Hour,
Minute,
Second,
Measurement Period Start-time,
Measurement Period Length,
Peak Period Measurement Start-time,
Peak Samples,
cktSrcIfIndex,
cktAtmVPI,
cktAtmVCI,
cktPrivateNet,
cktCustomerID,
cktOperStatus,
cktAtmControl,
cktAtmUserPlane,
cktATMQos,
cktATMRQos,
InPassedUsrOamCLP0Cells,
InPassedUsrOamCLP0CellsPeak,
InPassedUsrOamCLP1Cells,
InPassedUsrOamCLP1CellsPeak,
InDroppedUsrOamCLP0Cells,
InDroppedUsrOamCLP0CellsPeak,
InDroppedUsrOamCLP1Cells,
InDroppedUsrOamCLP1CellsPeak,
InTaggedUsrOamCells,
InTaggedUsrOamCellsPeak,
OutUsrCLP0Cells,
OutUsrCLP0CellsPeak,

OutUsrCLP1Cells,
OutUsrCLP1CellsPeak,
OutOamCLP0Cells,
OutOamCLP0CellsPeak,
OutOamCLP1Cells,
OutOamCLP1CellsPeak,
OutDropFcUsrOamCLP0Cells,

OutDropFcUsrOamCLP0CellsPeak,
OutDropFcUsrOamCLP1Cells,
OutDropFcUsrOamCLP1CellsPeak,

ATM Cell Trunk Translated File Format

The output format for the Cell Trunk translation is defined as follows:

Switch IP Address,
Year,
Month,
Day,
Hour,
Minute,
Second,
Measurement Period Start-time,
Measurement Period Length,
Peak Period Start-time,
Peak Samples,
ifIndex,
PortType,
ifOperStatus,
ifSpeed,
lportPrivateNet,
lportCustomerID,
lportFeeder,
lportSlotId,
lportPportId,
lportFlowControl,
Ingress Utilization (inbound),
Ingress Peak Utilization (inbound),
Egress Utilization (outbound),
Egress Peak Utilization (outbound),
InUsrOamCLP01Cells,
InUsrOamCLP01CellsPeak,
InErrorUsrOamCLP01Cells,
InErrorUsrOamCLP01CellsPeak,
InFcRMCells,
InFcRMCellsPeak,
OutUsrOamCLP01Cells,
OutUsrOamCLP01CellsPeak,
OutDroppedUsrOamCLP01Cells,
OutDroppedUsrOamCLP01CellsPeak,

ATM Logical Port (UNI, PNNI, B-ICI) Translated File Format

The output format for the Logical Port translation is defined as follows:

Switch IP Address,
Year,
Month,
Day,
Hour,
Minute,
Second,
Measurement Period Start-time,
Measurement Period Length,
Peak Period Start-time,
Peak Samples,
ifIndex,
PortType (UNI or ICI),
ifOperStatus,
ifSpeed,
lportPrivateNet,
lportCustomerID,
lportFeeder,
lportSlotId,
lportPportId,
lportFlowControl,
Ingress Utilization (inbound),
Ingress Peak Utilization (inbound),
Egress Utilization (outbound),
Egress Peak Utilization (outbound),
InUsrOamCLP01Cells,
InUsrOamCLP01CellsPeak,
InErrorUsrOamCLP01Cells,
InErrorUsrOamCLP01CellsPeak,
InFcRMCells,
InFcRMCellsPeak,

OutUsrOamCLP01Cells,
OutUsrOamCLP01CellsPeak,
OutDroppedUsrOamCLP01Cells,
OutDroppedUsrOamCLP01CellsPeak,

ATM Logical Port (UNI, PNNI, B-ICI) SVC Call Statistics Translated File Format

The output format for the Logical Port translation for SVC statistics is defined as follows:

Switch IP Address,
Year,
Month,
Day,
Hour,
Minute,
Second,
Measurement Period Start-time,
Measurement Period Length,
Peak Period Start-time,
Peak Samples,
ifIndex,
PortType (Three character string: UNI, B-ICI, or PNNI),
ifOperStatus,
lportPrivateNet,
lportCustomerID,
lportSlotId,
lportPportId,
lportSigStatus,
PtPtOrigActiveMin,
PtPtTermActiveMin,
PtPtOrigActiveMax,
PtPtTermActiveMax,
PtPtOrigAttempts,
PtPtOrigAttemptsPeak,
PtPtTermAttempts,
PtPtTermAttemptsPeak,
PtPtNetworkRej,
PtPtNetworkRejPeak,
PtPtOrigUsrRej,
PtPtOrigUsrRejPeak,
PtPtTermUsrRej,
PtPtTermUsrRejPeak,
PtPtOrigFailures,
PtPtOrigFailuresPeak,
PtPtTermFailures,
PtPtTermFailuresPeak,
PtMPtOrigActiveConnMin,
PtMPtTermActiveConnMin,
PtMPtOrigActiveConnMax,
PtMPtTermActiveConnMax,

PtMPtOrigActivePartiesMin,
PtMPtTermActivePartiesMin,
PtMPtOrigActivePartiesMax,
PtMPtTermActivePartiesMax,
PtMPtOrigConnAttempts,
PtMPtOrigConnAttemptsPeak,
PtMPtOrigPartyAttempts,
PtMPtOrigPartyAttemptsPeak,
PtMPtTermConnAttempts,
PtMPtTermConnAttemptsPeak,
PtMPtTermPartyAttempts,
PtMPtTermPartyAttemptsPeak,
PtMPtOrigNetworkConnRej,
PtMPtOrigNetworkConnRejPeak,
PtMPtOrigNetworkPartyRej,
PtMPtOrigNetworkPartyRejPeak,
PtMPtOrigRemUsrConnRej,
PtMPtOrigRemUsrConnRejPeak,
PtMPtOrigRemUsrPartyRej,
PtMPtOrigRemUsrPartyRejPeak,
PtMPtTermUsrConnRej,
PtMPtTermUsrConnRejPeak,
PtMPtTermUsrPartyRej,
PtMPtTermUsrPartyRejPeak,
PtMPtOrigConnFailures,
PtMPtOrigConnFailuresPeak,
PtMPtOrigPartyFailures,
PtMPtOrigPartyFailuresPeak,
PtMPtTermConnFailures,
PtMPtTermConnFailuresPeak,
PtMPtTermPartyFailures,
PtMPtTermPartyFailuresPeak,

B

Database Schema

Sybase 11x is required if you want the translated data to be bulk-copied into the Sybase database. The database table schema incorporates the ANSI 89 standard data types supported by Sybase 11x, including numeric fields for storing decimal (base 10) counters.

The following tables comprise the Sybase ATM Bulk Statistics database schema:

- ATMCktStat
- ATMTrkStat
- ATMPrtStat
- ATMSvcStat

The default Sybase database configuration is identical to the one defined by the B-STDX 9000 Bulk Statistics Collector. This enables you to have a single database server and database that contains both CBX 500 and B-STDX 900 Bulk Statistics data.

Alternatively, you can specify a different Sybase servername or database name. This allows you to utilize multiple Sybase servers to store ATM Bulk Statistics data. You can also use a single Sybase server that contains two databases, one for CBX 500 data and one for B-STDX 9000 data.

The default Sybase server name is CASCBSTAT. The default Sybase database name is cascstat. The default Sybase administer name is sa. The default Sybase administer password is superbase.

ATMCktStat Table

Table B-1 lists the column names and type of data in the ATMCktStat table. The ATMCktstat table stores the ATM Permanent Virtual Circuit (PVC) statistics. The column name indicates the field name. The type indicates the Sybase data type associated with the field.

Table B-1. ATMCktStat Table

Column Name	Type
switchIPAddr	char(15) — not null
year	smallint — not null
month	smallint — not null
day	smallint — not null
hour	smallint — not null
minute	smallint — not null
second	smallint — not null
startTime	int — not null
msrmtPdLength	smallint — not null
peakPdStartTime	smallint — not null
peakSamples	smallint — not null
cktSrcIfIndex	smallint — not null
cktAtmVPI	int — not null
cktAtmVCI	int — not null
cktPrivateNet	smallint — not null
cktCustomerID	int — not null
cktOperStatus	smallint — not null
cktFlowControl	smallint — not null
cktAtmUserPlane	smallint — not null
cktATMQos	smallint — not null
cktATMRQos	smallint — not null

Table B-1. ATMCktStat Table (Continued)

Column Name	Type
InPassedUsrOamCLP0Cells	numeric(12,0) — not null
InPassedUsrOamCLP0Peak	numeric(10,0) — not null
InPassedUsrOamCLP1Cells	numeric(12,0) — not null
InPassedUsrOamCLP1CellsPeak	numeric(10,0) — not null
InDroppedUsrOamCLP0Cells	numeric(12,0) — not null
InDroppedUsrOamCLP0CellsPeak	numeric(10,0) — not null
InDroppedUsrOamCLP1Cells	numeric(12,0) — not null
InDroppedUsrOamCLP1CellsPeak	numeric(10,0) — not null
InTaggedUsrOamCells	numeric(12,0) — not null
InTaggedUsrOamCellsPeak	numeric(10,0) — not null
OutUsrCLP0Cells	numeric(12,0) — not null
OutUsrCLP0CellsPeak	numeric(10,0) — not null
OutUsrCLP1Cells	numeric(12,0) — not null
OutUsrCLP1CellsPeak	numeric(10,0) — not null
OutOamCLP0Cells	numeric(12,0) — not null
OutOamCLP0CellsPeak	numeric(10,0) — not null
OutOamCLP1Cells	numeric(12,0) — not null
OutOamCLP1CellsPeak	numeric(10,0) — not null
OutDropFcUsrOamCLP0Cells	numeric(12,0) — not null
OutDropFcUsrOamCLP0CellsPeak	numeric(10,0) — not null
OutDropFcUsrOamCLP1Cells	numeric(12,0) — not null
OutDropFcUsrOamCLP0CellsPeak	numeric(10,0) — not null

ATMTrkStat Table

Table B-2 lists the column names and type of data in the ATMTrkStat table. The ATMTrkStat table stores the ATM cell trunk statistics. The column name indicates the field name and the type indicates the Sybase data type associated with the field.

Table B-2. ATM TrkStat Table

Column Name	Type
switchIPAddr	char(15) — not null
year	smallint — not null
month	smallint — not null
day	smallint — not null
hour	smallint — not null
minute	smallint — not null
second	smallint — not null
startTime	int — not null
msrmtPdLength	smallint — not null
peakPdStartTime	smallint — not null
peakSamples	smallint — not null
ifIndex	smallint — not null
ifOperStatus	int — not null
ifSpeed	int — not null
PrivateNet	smallint — not null
CustomerID	int — not null
lportFeeder	smallint — not null
lportSlotId	smallint — not null
lportPportId	smallint — not null
lportFlowControl	smallint — not null
ingressUtil	real — not null
ingressPeakUtil	real — not null

Table B-2. ATM TrkStat Table (Continued)

Column Name	Type
egressUtil	real — not null
egressPeakUtil	real — not null
InUsrOamCLP01Cells	numeric(12,0) — not null
InUsrOamCLP01CellsPeak	numeric(10,0) — not null
InErrorUsrOamCLP01Cells	numeric(12,0) — not null
InErrorUsrOamCLP01CellsPeak	numeric(10,0) — not null
OutUsrOamCLP01Cells	numeric(12,0) — not null
OutUsrOamCLP01CellsPeak	numeric(10,0) — not null
OutDroppedUsrOamCLP01Cells	numeric(12,0) — not null
OutDroppedUsrOamCLP01Cells Peak	numeric(10,0) — not null

ATMPrtStat Table

Table B-3 lists the column names and type of data in the ATMPrtStat table. The ATMPrtStat table stores the ATM Logical Port (UNI, B-ICI, and PNNI) statistics. The column name indicates the field name and the type indicates the Sybase data type associated with the field.

Table B-3. ATMPrtStat Table

Column Name	Type
switchIPAddr	char(15) — not null
year	smallint — not null
month	smallint — not null
day	smallint — not null
hour	smallint — not null
minute	smallint — not null
second	smallint — not null
startTime	int — not null
msrmtPdLength	smallint — not null
peakPdStartTime	smallint — not null
peakSamples	smallint — not null
ifIndex	smallint — not null
ifOperStatus	int — not null
ifSpeed	int — not null
PrivateNet	smallint — not null
CustomerID	int — not null
lportFeeder	smallint — not null
lportSlotId	smallint — not null
lportPportId	smallint — not null
lportFlowControl	smallint — not null
ingressUtil	real — not null

Table B-3. ATMPrtStat Table (Continued)

Column Name	Type
ingressPeakUtil	real — not null
egressUtil	real — not null
egressPeakUtil	real — not null
InUsrOamCLP01Cells	numeric(12,0) — not null
InUsrOamCLP01CellsPeak	numeric(10,0) — not null
InErrorUsrOamCLP01Cells	numeric(12,0) — not null
InErrorUsrOamCLP01CellsPeak	numeric(10,0) — not null
OutUsrOamCLP01Cells	numeric(12,0) — not null
OutUsrOamCLP01CellsPeak	numeric(10,0) — not null
OutDroppedUsrOamCLP01Cells	numeric(12,0) — not null
OutDroppedUsrOamCLP01Cells Peak	numeric(10,0) — not null

ATMSvcStat Table

Table B-4 lists the column names and type of data in the ATMSvcStat table. The ATMSvcStat table stores the ATM Logical Port (UNI, B-ICI) SVC Call statistics. The column name indicates the field name and the type indicates the Sybase data type associated with the field.

Table B-4. ATMSvcStat Table

Column Name	Type
switchIPAddr	char(15) — not null
year	smallint — not null
month	smallint — not null
day	smallint — not null
hour	smallint — not null
minute	smallint — not null
second	smallint — not null
startTime	int — not null
msrmtPdLength	smallint — not null
peakPdStartTime	smallint — not null
peakSamples	smallint — not null
ifIndex	smallint — not null
portType	char(3) — not null
ifOperStatus	smallint — not null
PrivateNet	smallint — not null
CustomerID	int — not null
lportSlotId	smallint — not null
lportPportId	smallint — not null
lportSigStatus	smallint — not null
SvcPtPtOrigActiveMin	numeric(10,0) — not null
SvcPtPtTermActiveMin	numeric(10,0) — not null

Table B-4. ATMSvcStat Table (Continued)

Column Name	Type
SvcPtPtOrigActiveMax	numeric(10,0) — not null
SvcPtPtTermActiveMax	numeric(10,0) — not null
SvcPtPtOrigAttempts	numeric(10,0) — not null
SvcPtPtOrigAttemptsPeak	numeric(10,0) — not null
SvcPtPtTermAttempts	numeric(10,0) — not null
SvcPtPTermAttemptsPeak	numeric(10,0) — not null
SvcPtPtNetworkRej	numeric(10,0) — not null
SvcPtPtNetworkRejPeak	numeric(10,0) — not null
SvcPtPtOrigUserRej	numeric(10,0) — not null
SvcPtPtOrigUserRejPeak	numeric(10,0) — not null
SvcPtPtTermUserRej	numeric(10,0) — not null
SvcPtPTermUserRejPeak	numeric(10,0) — not null
SvcPtPtOrigFailures	numeric(10,0) — not null
SvcPtPtOrigFailuresPeak	numeric(10,0) — not null
SvcPtPtTermFailures	numeric(10,0) — not null
SvcPtPTermFailuresPeak	numeric(10,0) — not null
SvcPtMPtOrigActiveConnMin	numeric(10,0) — not null
SvcPtMPtTermActiveConnMin	numeric(10,0) — not null
SvcPtMPtOrigActiveConnMin	numeric(10,0) — not null
SvcPtMPtTermActiveConnMin	numeric(10,0) — not null
SvcPtMPtOrigActivePartiesMin	numeric(10,0) — not null
SvcPtMPtOrigActivePartiesMax	numeric(10,0) — not null
SvcPtMptTermActivePartiesMax	numeric(10,0) — not null
SvcPtMptOrigConnAttempts	numeric(10,0) — not null
SvcPtMptOrigConnAttemptsPeak	numeric(10,0) — not null
SvcPtMptOrigPartyAttempts	numeric(10,0) — not null

Table B-4. ATMSvcStat Table (Continued)

Column Name	Type
SvcPtMptOrigPartyAttemptsPeak	numeric(10,0) — not null
SvcPtMptTermConnAttempts	numeric(10,0) — not null
SvcPtMptTermConnAttemptsPeak	numeric(10,0) — not null
SvcPtMptTermPartyAttemptsPeak	numeric(10,0) — not null
SvcPtMPtorigNetworkConnRej	numeric(10,0) — not null
SvcPtMPtorigNetworkConnRejPeak	numeric(10,0) — not null
SvcPtMPtOrigNetworkPartyRej	numeric(10,0) — not null
SvcPtMPtOrigNetworkPartyRejPeak	numeric(10,0) — not null
SvcPtMPtOrigRemUserConnRej	numeric(10,0) — not null
SvcPtMPtOrigRemUserConnRejPeak	numeric(10,0) — not null
SvcPtMPtOrigRemUserPartyRej	numeric(10,0) — not null
SvcPtMPtOrigRemUserPartyRejPeak	numeric(10,0) — not null
SvcPtMPtTermUserConnRej	numeric(10,0) — not null
SvcPtMPtTermUserConnRejPeak	numeric(10,0) — not null
SvcPtMPtTermUserPartyRej	numeric(10,0) — not null
SvcPtMPtTermUserPartyRejPeak	numeric(10,0) — not null
SvcPtMPtOrigConnFailures	numeric(10,0) — not null
SvcPtMPtOrigConnFailuresPeak	numeric(10,0) — not null
SvcPtMPtOrigPartyFailures	numeric(10,0) — not null
SvcPtMPtOrigPartyFailuresPeak	numeric(10,0) — not null
SvcPtMPtTermConnFailures	numeric(10,0) — not null
SvcPtMPtTermConnFailuresPeak	numeric(10,0) — not null
SvcPtMPtTermPartyFailures	numeric(10,0) — not null
SvcPtMPtTermPartyFailuresPeak	numeric(10,0) — not null

C

Calculating Disk Space

This appendix describes the disk space requirements for storing:

- Translated and raw statistics files for the current day's processing
- Archived, translated, and raw statistics files
- Translated data in the Sybase 11x database

Storing Raw, Translated, and Archived Statistics

To calculate the amount of space (in bytes) required to maintain raw, translated, and archived data statistics, use the following formulas.

Formula 1 — Raw Data Statistics

(*/<install_dir>/BulkStatsATM/data/raw*)

The size of the raw data statistics file for a single measurement period for a given CBX 500 is:

R = (number of trunks x 116) +
(number of UNI lports x 119) +
(number of circuits x 304) +
(number of SVC lports x 185)

The total disk space required to store raw data statistics for one day for a single CBX 500 is:

r(D) = R x 24

Formula 2 — Archived Raw Statistics

(*/<install_dir>/BulkStatsATM.var*)

Archived raw statistics files are stored in compressed format. Therefore, the total amount of disk space required to store archived raw statistics files for *n* days can be estimated as follows:

r(A) = r(D) x .40

Where:

.40 is the typical compression ratio for the UNIX Compress Utility.

Formula 3 — Translated Data Statistics

(*/<install_dir>/BulkStatsATM/data/current*)

The size of translated data statistics files for a single measurement period for a given CBX 500 is:

T = (number trunks x 258) +
(number of UNI lports x 258) +
(number of circuits x 816) +
(number of SVC lports x 501)

The total disk space required to store translated data statistics for one day for a single CBX 500 is:

t(D) = T x 24

The size estimates for translated data files assume that all counts are at maximum field width. The estimates are inflated.

Formula 4 — Archived Translated Statistics

(*/<install_dir>/BulkStatsATM.var*)

Archived translated statistics files are stored in compressed format. Therefore, the total amount of disk space required to store archived translated statistics files for *n* days can be estimated as follows:

t(A) = t(D) x .40

Where:

.40 is the typical compression ratio for the UNIX Compress Utility.

Formula 5 — Total Disk Space Required for a Single Day

(*/<install_dir>/BulkStatsATM/data*)

The size of the disk partition for the data directory in */opt/BulkStatsATM* is determined as the sum of the sizes of the translated data statistics for the current and previous day, plus the size of the raw data statistics file:

$$T(D) = 2 \times t(D) + r(D)$$

Formula 6 — Total Space Required for the Archive

(*/<install_dir>/BulkStatsATM.var*)

The size of the disk partition for the archive directory is determined as the sum of the sizes of the archived files:

$$T(A) = t(A) + r(A)$$

Total Disk Space Required for all Statistics

The total amount of disk space required to store raw, translated, and archived statistics is determined as the sum of the total disk space required to store the current day's statistics, plus the total disk space required to store the archived data statistics:

$$T = T(D) + T(A)$$

Estimating Sybase 11x Database Size

The Sybase 11x stored procedure called *sp_estspace* was used to determine the following formulas for estimating the Sybase 11x database size. The formulas are specified in multiples of 1,000 rows (or 1,000 statistics samples).

S = Sybase 11x data size (in megabytes) to store one hour's worth of data.

Where:

size = (trunks x .34) + (UNI lports x .17) + (circuits x .48) + (UNI SVC lports x .41)
trunks = the number of trunks, as a multiple of 1,000
UNI lports = the number of UNI lports, as a multiple of 1,000
circuits = the number of circuits, as a multiple of 1,000
UNI SVC lports = the number of UNI SVC lports, as a multiple of 1,000

The Sybase 11x database size to store *n* days worth of date is S x 24 x N

The size of the transaction log should be at least .5 x S. Therefore, the total amount of disk space (in megabytes) for the Sybase 11x data should be at least:

1.5 x S x 24 x N = 36 x S x N

Example:

If your network includes the following, use the formulas listed below.

- 50 trunks
- 2,000 UNI lports
- 1,000 circuits
- 2,000 UNI SVC lports

Size = (trunks x .34) + (UNI lports x .17) + (circuits x .48) +
(UNI SVC lports x .41)

S = (1 x .34) + (2 x .17) + (1 x .48) + (2 x .41)
= .34 + .34 + .48 + .82
= 1.98 MB

To store the data for 30 days, the total disk space required is:

= 36 x 1.98 x 30
= 2138 MB
= 2.1 GB

The actual size of the database should be at least:

= 1.98 x 24 x 30
= 1425 MB

The actual size of the transaction log should be at least:

= 1425 x .5
= 713 MB

D

Configuring NTP

This appendix describes how to configure the ATM Bulk Statistics Collection Station (the Collector) with the Network Time Protocol (NTP). NTP enables you to specify a reference server to be used as a clock synchronization source for the switches in your network.

The Collector includes a public domain version of the NTP from the University of Delaware. Time synchronization of the switch network and network management servers via NTP is accomplished by configuring the Collector to execute the NTP software.

The Collector, via the NTP protocol, synchronizes its time-of-day clocks to one or more external time references. The default configuration provided by the Collector references three publicly available time servers running in the Internet. If your site already maintains an NTP time server, this time server should be included in the set of servers referenced by the Collector.

Supporting documentation in HTML format is available in the */CascadeAS/ntp/html* directory on the Collector. Refer to the following HTML document on the Collector:

```
CascadeAS/ntp/html/index.html
```

For more information on the NTP protocol, refer to http://www.eecis.udel.edu/~ntp.

Copyright Notice

The following copyright notice applies to all files collectively called the Network Time Protocol, Version 4 Distribution. Unless specifically declared otherwise in an individual file, this notice applies as if the text was explicitly included in the file.

NTP Overview

When installing the ATM Bulk Statistics software, the installation script prompts you as to whether or not to install NTP. If you opt to install NTP, the installation script places the NTP software in the */usr/ntp* directory, and configures the Collector to execute NTP.

If you do not install NTP, the switch network acquires its time from the CascadeView.

If you installed NTP, verify the following:

- In the */etc/services* files, verify that the following lines are present and not commented out. If these lines are not present, or they are commented out, NTP cannot function properly.

  ```
  ntp 123/tcp# Network Time Protocol
  ntp 123/udp# Network Time Protocol
  ```

- If you are referencing external time servers in the Internet, your gateway to the Internet must allow TCP and UDP traffic to and from the NTP port (123).

The NTP daemon, **xntp**, starts automatically each time the workstation/server is reset. The file */etc/rc3.d/S99xntpd* is executed at system startup and restarts the NTP daemon.

At startup time, the xntp daemon reads the initial configuration from */etc/ntp.conf*. This file contains a list of servers that the xntpd daemon can poll for time synchronization. By default, three time servers in the United States are referenced:

- tick.usno.navy.mil
- clock.llnl.gov
- bitsy.mit.edu

Other time servers are included in the configuration, but are disabled.

Cascade recommends that you contact the noted contact person for each time server. Be sure to notify them that you are referencing their clocks in the event that the time server support is changed in the future.

Cascade provides three reference servers by default. You should edit the reference server entries in the *ntp.conf* file only if the reference servers entered by default are not adequate for your needs. A list of reference servers can be obtained from the following web site:

```
http://www.eecis.udel.edu/~ntp/
```

Running NTP

To run NTP, you must execute the xntpd daemon. You can execute this daemon via a startup file that is run each time CascadeView comes up.

Using ntpq to Verify NTP

To verify that the xntpd daemon is running correctly, you must run the ntpq routine. This routine reads the time from the configured reference server, and checks the status information regarding a system's references.

The following commands are available for a quick verification of xntpd:

host [*IP address of server*]	Sets ntp to reference a particular reference server.
rv	Read variables from the selected host.
pe	Read information regarding a host's references.

The rv Command

The rv command displays the variable associated with a reference time server. It takes approximately eight time requests, or eight minutes, for a time server to become synchronized before the leap field is set to leap=11 (to indicate an unsynchronized state).

Once the server becomes synchronized, leap is set to leap=00, and the refid field is set to the ID of the reference server being used as the synchronization source.

If a server fails to become synchronized to a server other than its own local UNIX clock, then either the references configured in the *ntp.conf* file are not responding, or a network problem exists. To resolve this, make sure that the host machine's */etc/services* file is configured for NTP using udp on port 123. Also verify that port 123 is not being blocked by a firewall in either direction.

For more information, refer to */CascadeAS/ntp/html/debug.html*.

The pe Command

The pe command displays information pertaining to the server's references under the following columns:

```
    remote     refid     st    t    when    poll    reach   delay    offset   disp
```

The reach column is non-zero for references from which the server has received data. For more information on the columns in this display, refer to the NTP documentation stored in the */CascadeAS/ntp/html* directory on the Collector.

Index

A

Add Management VPI/VCI dialog box 2-40
Add NMS Entry dialog box 2-30
Add NMS Path dialog box 2-28
Archived files
  executing scripts 1-7
  purging 1-7
ATM Bulk Statistics
  B-ICI statistics 1-4
  calculating disk space C-1
  CBX 500 1-3, 2-33
  Cell Trunk statistics 1-4
  configuration file 2-22
  configuring a management VPI/VCI 2-37
  dababase schema B-1
  Debug Translator 4-3
  de-installation 2-24
  description of 1-1 to 1-13
  directory structure 2-3
  enabling on the CBX 500 2-33
  hardware requirements 1-12
  installation 2-2 to 2-24
  installing Sybase 11 3-1 to 3-25
  logical port statistics 4-7
  logical port SVC statistics 4-9
  operational states 2-33
  PVC statistics 1-4, 4-4
  raw statistics files 1-3
  running 4-1
  setting attributes 2-31
  software requirements 1-12
  starting 4-2
  stopping 4-2
  troubleshooting 5-2
  UNI statistics 1-4
  upgrade procedure 2-25
ATM cell trunk translated file formats A-4
ATM Flow Control Processor 4-5, 4-7
ATM logical port translated file format A-5
ATM PVC translated file format A-3
ATM statistics 4-3 to 4-14
ATM_bsdump 4-3
ATMCktStat table B-1, B-2
ATMPrtStat table B-1, B-6
ATMSvcStat table B-1, B-8
ATMTrkStat table B-1, B-4
Automatic restart 1-9

B

Base Collection Period (BCP) 2-36
B-ICI 1-1, A-5
B-ICI statistics 1-4
B-STDX 9000 1-3
Bulk collector address 2-32
Bulk Statistics Configuration dialog box 2-35
Bulk transfer state
  active 2-32
  inactive 2-32

C

Calculating disk space C-1 to C-5
CascadeView
  master device 3-16
  Network Time Protocol (NTP) 1-9
  setting device name 3-14
CBX 500
  5-minute peak statistics 1-3
  ATM Bulk Statistics architecture 1-3
  ATM statistics 1-4
  configuring a management VPI/VCI 2-37
  hardware 1-13
  measurement period statistics 1-3
  Network Time Protocol (NTP) 1-9
  PVC statistics 1-4
  raw statistics files 1-3
  setting attributes 2-31
  software 1-13
Cell trunk statistics 1-4
Collection process
  CBX 500 versus B-STDX 9000 1-3
  configuration 2-16, 4-3
  description of 1-2
Collection Station. See The Collector
Common problems 5-2
Configuration examples 1-10 to 1-11
Configuration file 2-22
Console commands
  description of 4-2 to 4-3
  shutdown 4-2
  startup 4-2
  status 4-3
CRC failure 5-2
Customer Network Management (CNM) reports 1-1

D

Debug Translator 4-3
De-installation procedure 2-24
Directory structure 2-3
Disk space requirements C-4

E

Event logging 1-9

F

Filename error 5-2
Formatting 40-bit counters A-2

G

Gathering ATM statistics 4-3
General header fields A-1

H

Hardware requirements 1-12

I

Installation
  ATM Bulk Statistics 2-2 to 2-21
  checklists 2-4 to 2-14
  overview 2-2
  requirements 2-1
  starting the pkgadd utility 2-16
  Sybase 11 install script 3-21
Installing Sybase 11
  Backup Server's startup and shutdown files 3-13
  changing parameters 3-23
  creating a CascadeView device on partition 5 3-6
  creating a log device on partition 6 3-7
  creating a master device on partition 0 3-4
  creating a system procs device on partition 4 3-5
  creating additional user accounts 3-14
  creating the NMS user 3-13
  defining partition 7 3-9
  defining partitions 1 and 3 3-4
  entering the database SA password 3-13
  entering the database server name 3-12
  entering the error log 3-13

getting started 3-1
loading the Cascade-supplied Sybase tape 3-10
partitioning the second disk 3-1
setting socket numbers 3-14
Setting up the system 3-12

L

Local backup server 3-25
Logical port statistics 4-7
Logical port SVC statistics 4-9
LPort name 2-41
LPort type 2-41

M

Measurement period
length of A-1
peak samples A-2
start time A-1
Measurment period
description of 1-2

N

Network Time Protocol (NTP)
configuring D-1
description of 1-9
starting D-3
verifying D-3
Nightly procedures
purging archived files 1-7
raw statistics 1-7
translated statistics 1-7
NMS entry
defining 2-29
description of 2-29 to 2-30
NMS path
defining 2-27
description of 2-27
ntpq routine D-3

P

pe command D-4
Peak count collection 2-36
Peak period
measurements 1-2, A-2
samples A-2
pkgadd utility
description of 2-15
starting 2-16
pkgrm utility
description of 2-24
starting 2-24
PNNI 1-1, 1-6, A-5, B-6
PPort ID 2-39, 2-41
Purging archived files 1-7
PVC statistics
data loss 4-4
description of 4-4
input and output nodes 1-4

R

Raw statistics files
archiving 1-7
collecting 1-7
description of 1-3
ReConfig script 2-24
Reference time server
displaying variables for D-4
Remote users 3-24
rv command D-4

S

Select End Logical Port dialog box 2-39
Set All Management VPI/VCIs dialog box 2-38
Set Bulk Statistics Attributes dialog box 2-31
Set NMS Entries dialog box 2-29
Set NMS Path dialog box 2-27
Setting 3-12
Setting attributes 2-31
Setting raw partitions 3-16

Shutdown command 1-8, 4-2
Slot ID 2-39, 2-41
Software requirements 1-12
Software upgrade 2-25
Start-up command 1-8, 4-2
Statistics
  ATM logical port 4-7
  ATM logical port SVC 4-9
  ATM PVC 4-4
  gathering 4-3 to 4-9
  storing C-2 to C-4
Status command 1-8, 4-3
Storing statistics
  archived statistics C-2
  raw statistics C-2
  translated statistics C-2
SVC call statistics format A-6
Sybase 11
  database schema B-1
  description of 1-8
  estimating database size C-5
  installing 3-1 to 3-25
  partition settings 3-2
  partition table 3-5
  setting up the system 3-12
System management
  shutdown command 1-8, 4-2
  start-up command 1-8, 4-2
  status command 1-8, 4-3

T

Tail window 3-21
Technical Response Center
  calling by phone 5-1
  sending Email 5-1
  sending FAXes 5-1
The Collector
  address 2-32
  auto restart 1-9
  configuration examples 1-10
  database schema B-1
  description of 1-4 to 1-7
  directory structure 2-3
  event logging 1-9
  hardware requirements 1-12
  installation 2-2 to 2-21
  Network Time Protocol (NTP) 1-9
  nightly procedures 1-7
  raw statistics files 1-5
  shutdown command 1-8, 4-2
  software requirements 1-12
  start-up command 1-8, 4-2
  status command 1-8, 4-3
  translated files 1-6
  translation process 1-6
  troubleshooting 5-2
  upgrade procedure 2-25
Time server
  displaying information on references D-4
  displaying variables for D-4
Total count collection 2-36
Translated file formats
  ATM cell trunk A-4
  ATM logical port A-5
  ATM PVC A-3
  SVC call statistics A-5
Translated files 1-6
Translated statistics 1-7
Translation process 1-5
Translator statistics format A-1 to A-7
Troubleshooting 5-1 to 5-3

U

UNI 1-1, A-5
UNI statistics 1-4
UNIX compress utility 1-7
Unsuccessful bulk copy 5-3
Upgrade procedure 2-25
Usage Parameter Control (UPC) 4-4
Using file system files 3-18

V

Verifying xntpd daemon D-3

X

xntpd daemon D-3